

SUPPORT FOR THE AMENDMENTS

The present amendment amends claims 11 and 30.

Support for the amendment to claims 11 and 30 is found at specification page 1, lines 6-8, page 2, lines 17-23, page 4, line 15, page 12, lines 1-4, as well as original claim 1.

It is believed that these amendments have not resulted in the introduction of new matter.

REMARKS

Claims 11-30 are currently pending in the present application. Claims 11 and 30 have been amended by the present amendment.

Applicants wish to extend their appreciation to Supervisory Examiner Douyon and Examiner Ahvazi for the helpful and courteous discussion held on December 9, 2008, with their undersigned Representative. During the meeting, the prior art and written description rejections were discussed, along with potential amendments and/or arguments having a particular emphasis on rulings established in U.S. case law for overcoming the rejections. The content of this discussion is believed to be reflected in the remarks set forth herein.

The rejections under 35 U.S.C. § 103(a) of: (1) claims 11-22 and 30 as being obvious over Tanaka (U.S. Patent 4,789,490) in view of Tsubouchi (U.S. Patent 5,126,065); (2) claims 23-25 and 29 as being obvious over Tanaka in view of Tsubouchi and Weippert (U.S. Patent 5,817,256); and (3) claims 26-28 as being obvious over Tanaka in view of Tsubouchi, Weippert, Hei (U.S. 2003/0228996) and Hull (U.S. 2004/0123516), are respectfully traversed in part, and obviated by amendment in part, with respect to claims 11-30, which incorporates the limitation that the oil composition is an immersion oil for a microscope into claim 11.

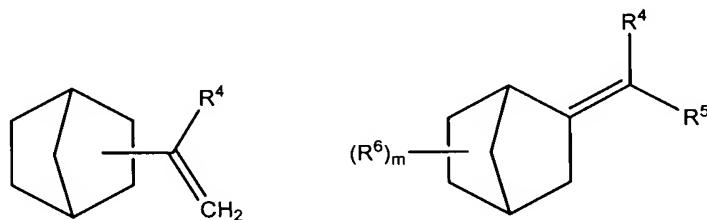
Amended claim 11 recites an oil composition comprising: a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene; and a liquid diene-based polymer having a number average molecular weight of 300 to 100,000, wherein the liquid diene-based polymer is neither a liquid diene-based polymer of the norbornane, nor a liquid diene-based polymer of the norbornene, wherein the oil composition is an immersion oil for a microscope.

Tanaka describes an immersion oil composition for a fluorescent microscope comprising a liquid dienic polymer having a number average molecular weight of 500 to 20,000, wherein the immersion oil composition exhibits reduced fluorescence emissions

under excitation with ultraviolet light (See e.g., abstract, column 1, lines 12-15 and 46-68, column 2, lines 15-28 and 63-68).

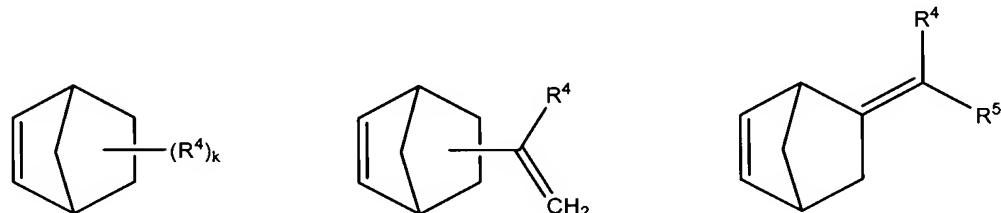
Tsubouchi describes a traction drive fluid composition for improving the coefficient of traction in traction drives, such as continuously variable vehicle transmissions, wherein the traction drive fluid composition comprises a dimer, a trimer or a tetramer of one or both of a norbornane and a norbornene,

wherein the norbornane is represented by either of the following general formulae:



wherein R⁴, R⁵ and R⁶ are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and m is 1 or 2, and

wherein the norbornene is represented by any of the following general formulae:



wherein R⁴ and R⁵ are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and k is 1 or 2 (See e.g., abstract, column 1, lines 8-24, column 2, lines 14-53, column 3, lines 45-68, column 4, lines 1-25).

Weippert describes an immersion oil for a microscope comprising di-(tricyclodecanemethylol)phthalate (See e.g., column 2, lines 33-36).

Hei describes an antimicrobial composition comprising an antimicrobial solvent, wherein the antimicrobial solvent is selected from a plethora of various antimicrobial solvents including, but not limited to, acetophenone and phenylethanol (See e.g., [0009], [0029]).

Hull describes a fuel composition for a modified internal combustion spark ignition engine comprising: a fuel grade ethanol; an oxygen containing component; and at least one C₆-C₁₂ hydrocarbon, which is selected from a plethora of various C₆-C₁₂ hydrocarbons including, but not limited to, tert-butylxylene (See e.g., abstract, [0084]).

As acknowledged on page 5, lines 4-6, of the Official Action, Tanaka fails to describe an immersion oil composition for a microscope comprising a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene, as presently claimed.

Tsubouchi fails to describe that the traction drive fluid composition further comprises the claimed liquid diene-based polymer having a number average molecular weight of 300 to 100,000, wherein the liquid diene-based polymer is neither a liquid diene-based polymer of the norbornane, nor a liquid diene-based polymer of the norbornene.

Contrary to the Official Action (See e.g., page 7, lines 3-6), Example 9 of Tsubouchi merely describes the synthesis of hydrogenated dimers of isopropylidene norbornane by performing a Diels-Alder reaction between cyclopentadiene and methyl vinyl ketone to produce acetyl norbornene, hydrogenating the acetyl norbornene using a palladium carbon catalyst to produce acetyl norbornane, reacting the acetyl norbornane with a methyl magnesium bromide Grignard reagent in the presence of tetrahydrofuran and ethyl ether followed by dehydration to produce isopropylidene norbornane, and dimerizing the isopropylidene norbornane to yield hydrogenated dimers thereof (See e.g., Example 9 at column 10, lines 40-68 and column 11, lines 1-16).

In order to rely upon a reference as a basis for rejecting the Applicant's invention, the reference must be either in the Applicant's *field of endeavor* or reasonably pertinent to the *particular problem* with which the inventor was concerned. See e.g., *In re Oetiker*, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Arriving at the Applicant's invention by combining elements from *non-analogous references* based on *hindsight reconstruction* is insufficient for establishing a *prima facie* case of obviousness. *Id.* at 1446.

Claim 11 has been amended to recite that the oil composition is an immersion oil for a microscope in order to define Applicant's field of endeavor.

As discussed in the present specification, conventional immersion oil compositions exhibit strong fluorescence emissions under excitation with ultraviolet light during fluorescence microscopy thereby increasing noise and reducing the accuracy of detection of specimens which exhibit weak fluorescence (See e.g., page 1, lines 21-26, page 2, lines 1-14).

Applicants have discovered that immersion oil compositions for microscopes in accordance with the presently claimed invention exhibit reduced fluorescence emissions under excitation with ultraviolet light during fluorescence microscopy thereby reducing noise and increasing the accuracy of detection of specimens which exhibit weak fluorescence (See e.g., page 1, lines 6-8, page 2, lines 17-26).

Unlike the present invention, Tsubouchi is directed to a *traction drive fluid composition for improving the coefficient of traction in traction drives of continuously variable vehicle transmissions*. Accordingly, the disclosure of Tsubouchi is *neither in the field of Applicant's endeavor nor reasonably pertinent to the particular problem being addressed by the inventors*.

Contrary to page 7, lines 7-12, of the Official Action, a skilled artisan would not have been motivated to combine Tanaka with the *clearly unrelated reference* of Tsubouchi, since Tanaka is directed to an immersion oil composition for a fluorescent microscope, wherein the

immersion oil composition exhibits reduced fluorescence emissions under excitation with ultraviolet light, whereas Tsubouchi is directed to a traction drive fluid composition for improving the coefficient of traction in traction drives of continuously variable vehicle transmissions.

Applicants therefore respectfully submit that a *prima facie* case of obviousness has not been established since Tsubouchi is neither in the field of Applicant's endeavor nor reasonably pertinent to the particular problem being addressed by the present inventors and because a skilled artisan would not have been motivated to incorporate the traction drive fluid composition of Tsubouchi into the immersion oil composition for a fluorescent microscope described in Tanaka, to arrive at the immersion oil composition for a microscope as presently claimed, absent *impermissible hindsight reconstruction*.

Weippert, Hei and Hull fail to compensate for the above-mentioned deficiencies of Tanaka and Tsubouchi.

Withdrawal of these grounds of rejection is respectfully requested.

The rejection of claim 11 under 35 U.S.C. § 112, first paragraph (written description), is respectfully traversed.

The originally filed specification is alleged as failing to provide adequate written description for the recitation that "said liquid diene-based polymer is neither a liquid diene-based polymer of said norbornane, nor a liquid diene-based polymer of said norbornene," as claimed in claim 11.

It is a well-settled premise of patent law that a negative limitation or exclusionary proviso explicitly excluding an element from the claim or a portion thereof is permissible, especially when the element recited in the negative proviso is positively recited in the specification. See MPEP § 2173.05(i) and *In re Johnson*, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977).

Pursuant to *In re Wertheim*, 541 F.2d 257, 265 (1976), the exact terms recited in the claimed invention need not be used *in ipsis verbis* or *in haec verba* in order to satisfy the written description requirement of 35 U.S.C. § 112, first paragraph. See also MPEP §§ 1302.01 and 2163.05(III). What is required is that the claimed invention must have been described with sufficient particularity such that a skilled artisan would recognize that the Applicants had possession of the claimed invention when the application was filed. See 35 U.S.C. § 112, first paragraph, and MPEP § 706.03(c).

With respect to claim 11, the originally filed specification clearly discloses and positively recites that the oil composition comprises: a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane (A) and a norbornene (B); and a liquid diene-based polymer (C) as one of the “*other components*” in the oil composition of the present invention (emphasis added) (See e.g., page 4, lines 15-20, and page 9, lines 5-11, as well as original claims 1, 4 and 5).

The originally filed specification also clearly discloses and positively recites that: vinylnorbornane, methylenenorbornane and ethylenenorbornane are examples of the norbornane (A); methylnorbornene, ethynorbornene, isopropynorbornene, dimethylnorbornene; vinylnorbornene, isopropenylnorbornene, methylenenorbornene, ethyldenenorbornene and isopropylidenenorbornene are examples of the norbornene (B); and a homopolymer of butadiene, a homopolymer of isoprene, a homopolymer of chloroprene, a copolymer of butadiene and isoprene, a copolymer of butadiene and acrylonitrile, and a copolymer of butadiene and 2-hexyl acrylate wherein are examples of the liquid diene-based polymer (C) (See e.g., page 5, lines 7-10 and 18-25, and page 9, lines 18-25).

Applicants therefore respectfully submit that a skilled artisan would immediately recognize that adequate support for the presently claimed invention has clearly been provided by the express, implicit and inherent disclosure set forth in the originally filed specification,

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Response to Official Action dated September 11, 2008

as evidenced hereinabove. Since the specification describes the claimed invention in sufficient detail such that a skilled artisan would reasonably conclude that the inventors had possession of the claimed invention at the time of filing, the amendment to claim 11 has not resulted in the introduction of new matter.

Withdrawal of this ground of rejection is respectfully requested.

In conclusion, Applicants submit that the present application is now in condition for allowance and notification to this effect is earnestly solicited.

Respectfully submitted,

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Source: USPQ, 2d Series (1986 - Present) > U.S. Court of Appeals, Federal Circuit > In re Oetiker, 24 USPQ2d 1443 (Fed. Cir. 1992)

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24 USPQ2d 1443

In re Oetiker

U.S. Court of Appeals Federal Circuit

No. 91-1026

Decided October 13, 1992

977 F2d 1443

Headnotes

PATENTS

[1] Practice and procedure in Patent and Trademark Office -- Prosecution -- In general (► 110.0901)

Patentability/Validity -- Obviousness -- In general (► 115.0901)

"Prima facie" case is procedural tool of patent examination which allocates burdens of going forward as between examiner and applicant; examiner bears initial burden, on review of prior art or on any other ground, of presenting prima facie case of unpatentability, and if that burden is met, burden of coming forward with evidence or argument shifts to applicant, and after applicant submits such evidence in response, patentability is determined on totality of record, by preponderance of evidence with due consideration to persuasiveness of argument.

[2] Practice and procedure in Patent and Trademark Office -- Board of Patent Appeals and Interferences -- In general (► 110.1101)

Board of Patent Appeals and Interferences, in reviewing examiner's decision on appeal, must necessarily weigh all evidence and argument, and board's observation that examiner made prima facie case of unpatentability is not improper, as long as ultimate determination of patentability is made on entire record.

[3] Practice and procedure in Patent and Trademark Office -- Prosecution -- In general (► 110.0901)

Patentability/Validity -- Obviousness -- In general (► 115.0901)

Concept of "prima facie" case of obviousness, which places initial burden on examiner, is of broad applicability and is not limited to chemical practice; that prima facie case may be established, or rebutted, by different forms of evidence in various technologies does not restrict concept to any particular field of technology.

[4] Patentability/Validity -- Obviousness -- Relevant prior art -- In general (► 115.0903.01)

Patentability/Validity -- Obviousness -- Combining references (► 115.0905)

Prior art reference, in order to be relied upon as basis for rejecting applicant's invention, must either be in field of applicant's endeavor or, if not, be reasonably pertinent to particular problem with which inventor was concerned; combination of elements from non-analogous sources, in manner that reconstructs applicant's invention only with benefit of hindsight, is insufficient to present prima facie case of

obviousness.

[5] Patentability/Validity -- Obviousness -- In general (► 115.0901)

Simplicity of invention is not itself inimical to patentability.

Case History and Disposition

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Application for patent, no. 06/942,694, filed by Hans Oetiker. From decision holding claims unpatentable, applicant appeals. Reversed; Nies, C.J., and Plager, J., concurring in separate opinions.

Attorneys

Paul M. Craig, Jr., Washington, D.C., for appellant.

John W. Dewhirst (Fred E. McKelvey, solicitor and Robert D. Edmonds, associate solicitor, with him on brief), for appellee.

Judge

Before Nies, chief judge, and Newman and Plager, circuit judges.

Opinion Text

Opinion By:

Newman, J.

Hans Oetiker appeals the decision of the United States Patent and Trademark Office Board of Patent Appeals and Interferences, holding unpatentable claims 1-14 and 6-21, all of the claims in patent application No. 06/942,694.¹ Oetiker appeals on procedural and substantive grounds.

¹ *Ex parte Oetiker*, No. 89-2230 (Bd. Pat App. & Interf. May 31, 1990; on reconsideration, August 23, 1990).

I PROCEDURE Background

All of the claims were finally rejected for obviousness in terms of 35 U.S.C. Section 103. The

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Board, upholding the rejection, stated that "the examiner has . . . established a *prima facie* case of obviousness . . . which is unrebutted by any objective evidence of nonobviousness". Oetiker stated that this Board holding was the first rejection of his claims for being "*prima facie* obvious", and filed rebuttal evidence with a petition for *reconsideration*. The Board declined to consider the new evidence or change its decision.

Oetiker states that a holding of *prima facie* obviousness means, in patent examination, that the claimed invention is subject to a rebuttable presumption of obviousness; that is, if the applicant can provide

evidence or argument in support of unobviousness, such evidence and argument will be considered, and the question of patentability will be redecided on the entire record. Oetiker states that a rejection made in the words “*prima facie* obvious” is understood by patent examiners and practitioners as an invitation to provide such rebuttal evidence.

Thus Oetiker argues that a holding by the Board of *prima facie* obviousness is a new ground of rejection, for during prosecution the examiner did not reject the claims in these words. Treating it as such, Oetiker offered affidavit evidence not previously filed, and requested *reconsideration* on the basis of this new evidence, or remand to the examiner for this purpose, in accordance with 37 C.F.R. Section 1.196(b):

Section 1.196(b) . . . When the Board . . . makes a new rejection of an appealed claim, the appellant may exercise either of the following two options . . .:

(1) The appellant may submit . . . a showing of facts . . . and have the matter reconsidered by the examiner in which event the application will be *remanded* to the examiner. . . .

(2) The appellant may have the case reconsidered under Section 1.197(b) by the Board . . . upon the same record.

The Board *on reconsideration* granted neither of the options of Section 1.196(b), stating that it had not made a new rejection.

At argument before this court the Commissioner’s counsel suggested that Oetiker could refile his patent application, pay a new fee, and obtain review of this new evidence in a new examination. Oetiker states that he was entitled to a complete examination, and did not get it.

Discussion

[1] The *prima facie* case is a procedural tool of patent examination, allocating the burdens of going forward as between examiner and applicant. *In re Spada*, 911 F.2d 705, 707 n.3, 15 USPQ2d 1655, 1657 n.3 (Fed.Cir. 1990). The term “*prima facie* case” refers only to the initial examination step. *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed.Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). As discussed in *In re Piasecki*, the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant.

After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument. See *In re Spada*, *supra*; *In re Corkill*, 771 F.2d 1496, 1500, 226 USPQ 1005, 1008 (Fed.Cir. 1985); *In re Caveny*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed.Cir. 1985); *In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed.Cir. 1984).

If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent. See *In re Grabiak*, 769 F.2d 729, 733, 226 USPQ 870, 873 (Fed.Cir. 1985); *In re Rinehart*, *supra*.

[2] In reviewing the examiner’s decision on appeal, the Board must necessarily weigh all of the evidence and argument. An observation by the Board that the examiner made a *prima facie* case is not improper, as long as the ultimate determination of patentability is made on the entire record. *In re Piasecki*, 745 F.2d at 1472, 223 USPQ at 788; *In re Rinehart*, 531 F.2d at 1052, 189 USPQ at 147.

The record here reveals that the application was fully prosecuted. References were cited and applied by the examiner, the applicant responded with argument, and the examiner then issued a final rejection, stating why he was not persuaded by the applicant’s argument. On review the Board stated that its

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decision was reached “after careful consideration of the appealed claims, the evidence of obviousness relied upon by the examiner and the arguments advanced by the appellant and the examiner”. The Board explained why it was unpersuaded by Oetiker’s arguments on appeal. We discern no irregularity in the procedure. The Board, in explaining that the examiner’s rejections constituted a *prima facie* case of obviousness, did not make a new rejection.

[3] Oetiker also argues that the concept of a “*prima facie* case of obviousness” has no role outside of the chemical arts. Oetiker

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refers to the origins of this term in the chemical practice, where properties may not be apparent from chemical structure. Oetiker distinguishes mechanical inventions, where the properties and workings of a mechanical device are apparent in the drawing of the structure. We think that the PTO is correct in treating the concept of the *prima facie* case as of broad applicability, for it places the initial burden on the examiner, the appropriate procedure whatever the technological class of invention. That a *prima facie* case may be established, or rebutted, by different forms of evidence in various technologies does not restrict the concept to any particular field of technology. “[T]he requirement of unobviousness in the case of chemical inventions is the same as for other types of inventions”. *In re Johnson*, 747 F.2d at 1460, 223 USPQ at 1263. This procedural tool is recognized in fields outside of the chemical arts. E.g., *In re Benno*, 768 F.2d 1340, 226 USPQ 683 (Fed.Cir. 1985); *In re McCarthy*, 763 F.2d 411, 226 USPQ 99 (Fed.Cir. 1985); *In re De Blauwe*, 736 F.2d 699, 222 USPQ 191 (Fed.Cir. 1984).

The Board’s usage of the term *prima facie* was imprecise for, as discussed *supra*, the term “*prima facie* obvious” relates to the burden on the examiner at the initial stage of the examination, while the conclusion of obviousness *vel non* is based on the preponderance of evidence and argument in the record. However, it was clear that the Board did not make a new rejection. Therefore the Board did not err in declining to consider at that stage the proffered evidence of commercial success.

II THE MERITS

Oetiker’s invention is an improvement in a “stepless, earless” metal clamp, a hose clamp that was generally described in an earlier ‘004 patent of Oetiker, but that differs in the presence of a feature that is described as a preassembly “hook”. This “hook” serves both to maintain the preassembly condition of the clamp and to be disengaged automatically when the clamp is tightened.

The cited references were Oetiker’s earlier-granted ‘004 patent, combined with a certain Lauro ‘400 patent. Lauro describes a plastic hook and eye fastener for use in garments, in which “unitary tabs of sewing needle puncturable plastic material . . . are affixable to clothing and the like by sewing”. Oetiker argues that there is no suggestion or motivation to the artisan to combine the teachings of the cited references, and that Lauro is nonanalogous art. Oetiker concludes that these references were improperly combined; that a person of ordinary skill, seeking to solve the problem facing Oetiker, would not look to the garment art for the solution. Oetiker also argues that even if combined the references do not render the claimed combination obvious.

The examiner stated that “since garments commonly use hooks for securement”, a person faced with the problem of unreliable maintenance of the pre-assembly configuration of an assembly line metal hose clamp would look to the garment industry art. The examiner explained further by stating that “Appellant’s device as disclosed could be utilized as part of a garment”. The Board did not repeat or support the examiner’s argument, or discuss its relevance. Indeed, the argument is not supportable. However, the Board held that the Lauro reference, although not “within the appellant’s specific field of endeavor” is nonetheless “analogous art” because it relates to a hooking problem, as does Oetiker’s invention.

The Board apparently reasoned that all hooking problems are analogous. At least, that is the argument now pressed by the Commissioner. The Commissioner states in his brief on appeal that “A disengageable catch, such as that used by Oetiker, is a common everyday mechanical concept that is variously

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employed in door latches and electrical and other switches, as well as in the hook and eye apparatus disclosed by Lauro". No such references were cited, however. While this court may take judicial notice of common everyday mechanical concepts in appropriate circumstances, the Commissioner did not explain why a "catch" of unstated structure in an electrical switch, for example, is such a concept and would have made Oetiker's invention obvious. Indeed, the Commissioner did not respond to Oetiker's argument that the cited references provide no teaching or suggestion that Lauro's molded hook and eye fastener, even if combined with Oetiker's '004 clamp, would achieve Oetiker's purpose.

[4] In order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See *In re Deminski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed.Cir. 1986). Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonably

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be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor. We have reminded ourselves and the PTO that it is necessary to consider "the reality of the circumstances", *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979) -- in other words, common sense -- in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.

It has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp, would reasonably be expected or motivated to look to fasteners for garments. The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself. *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed.Cir. 1988); *In re Geiger*, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed.Cir. 1987); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1147, 227 USPQ 543, 551 (Fed.Cir. 1985).

[5] Oetiker's invention is simple. Simplicity is not inimical to patentability. See *Goodyear Tire & Rubber Co. v. Ray-O-Vac Co.*, 321 U.S. 275, 279, 60 USPQ 386, 388 (1944) (simplicity of itself does not negative invention); *Panduit Corp. v. Dennison Mfg Co.*, 810 F.2d 1561, 1572, 1 USPQ2d 1593, 1600 (Fed.Cir.) (the patent system is not foreclosed to those who make simple inventions), cert. denied, 481 U.S. 1052 (1987).

We conclude that the references on which the Board relied were improperly combined. Accordingly, the Board erred in holding the claims unpatentable under section 103. The rejection of claims 1-4 and 16-21 is *REVERSED*.

Concurring Opinion Text

Concurrence By:

Nies, C.J., concurring.

I agree with the panel decision and write only to express my understanding of the language that there must be some teaching, reason, suggestion, or motivation found "in the prior art" or "in the prior art references" to make a combination to render an invention obvious within the meaning of 35 U.S.C. Section 103 (1988). Similar language appears in a number of opinions¹ and if taken literally would mean that an invention cannot be held to have been obvious unless something specific in a prior art reference would lead an inventor to combine the teachings therein with another piece of prior art.

¹ See, e.g., *Symbol Technologies, Inc. v. Opticon, Inc.*, 935 F.2d 1569, 19 USPQ2d 1241, 1246 (Fed.Cir. 1991); *In re Gorman*, 933 F.2d 982, 989, 18 USPQ2d 1885 , (Fed.Cir. 1991); *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430 , (Fed.Cir. 1990); *Smithkline Diagnostics, Inc. v. Helena Laboratories Corp.* , 859 F.2d 878, 887, 8 USPQ2d 1468, 1475 (Fed.Cir. 1988); *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed.Cir. 1988); *In re Stencil* , 828 F.2d 751, 755, 4 USPQ2d 1071, 1073 (Fed. Cir 1987); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.* , 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed.Cir. 1985), cert. denied, 475 U.S. 1017 (1986); *In re Grabiak* , 769 F.2d 729, 732, 226 USPQ 870, 872 (Fed.Cir. 1985).

This restrictive understanding of the concept of obviousness is clearly wrong. Other statements in opinions express the idea more generally. We have stated, for example, that the test is: "whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention," *In re Gorman*, 933 F.2d at 986, 18 USPQ2d at 1888, and "what the combined teachings . . . would have suggested to one of ordinary skill in the art," *In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed.Cir. 1991). We have also stated that "the prior art as a whole must suggest the desirability . . . of making the combination." *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed.Cir.), cert. denied, 488 U.S. 825 (1988); *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed.Cir. 1984).

I believe that it would better reflect the concept of obviousness to speak in terms of "from the prior art" rather than simply "in the prior art." The word "from" expresses the idea of the statute that we must look at the obviousness issue through the eyes of one of ordinary skill in the art and what one would be presumed to know with that background. What would be obvious to one of skill in the art is a different question from what would be obvious to a layman. An artisan is likely to extract more than a layman from reading a reference.

In any event, variance in the language used in opinions does not change the nature of the statutory inquiry. Under section 103, subject matter is unpatentable if it "would have been obvious . . . to a person having

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ordinary skill in the art." While there must be some teaching, reason, suggestion, or motivation to combine existing elements to produce the claimed device, it is not necessary that the cited references or prior art specifically suggest making the combination. *In re Nilssen* , 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed.Cir. 1988). Such suggestion or motivation to combine prior art teachings can derive solely from the existence of a teaching, which one of ordinary skill in the art would be presumed to know, and the use of that teaching to solve the same of similar problem which it addresses. *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979). See, also, *EWP Corp. v. Reliance Universal, Inc.* , 755 F.2d 898, 906-07, 225 USPQ 20, 25 (Fed.Cir.), cert. denied , 474 U.S. 843 (1985); *In re Sernaker*, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed.Cir. 1983). See also, *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) ("To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or implicitly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.").

In sum, it is off the mark for litigants to argue, as many do, that an invention cannot be held to have been obvious unless a suggestion to combine prior art teachings is found in a specific reference.

Concurring Opinion Text

Concurrence By:

Plager, J., concurring.

I join in the carefully-reasoned and well-written opinion of Judge Newman. With regard to Part I dealing with the PTO procedure, her explanation of the meaning and application of the 'prima facie case' concept should help clarify an area that remains marked by a lack of clarity. The need for that discussion, however, illustrates the pitfalls of the 'prima facie' practice of the PTO, and the difficulties created by this particular legalistically convoluted concept.

An applicant for a patent is entitled to the patent unless the application fails to meet the requirements established by law. It is the Commissioner's duty (acting through the examining officials) to determine that all requirements of the Patent Act are met. The burden is on the Commissioner to establish that the applicant is not entitled under the law to a patent. *In re Warner*, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967), cert. denied , 389 U.S. 1057 (1968). In rejecting an application, factual determinations by the PTO must be based on a preponderance of the evidence, and legal conclusions must be correct. *In re Caveney* , 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed.Cir. 1985).

The process of patent examination is an interactive one. See generally, Chisum, *Patents*, Section 11.03 *et seq.* (1992). The examiner cannot sit mum, leaving the applicant to shoot arrows into the dark hoping to somehow hit a secret objection harbored by the examiner. The 'prima facie case' notion, the exact origin of which appears obscure (see *In re Piasecki*, 745 F.2d 1468, 1472, 233 USPQ 785, 788 (Fed.Cir. 1984)), seemingly was intended to leave no doubt among examiners that they must state clearly and specifically any objections (the prima facie case) to patentability, and give the applicant fair opportunity to meet those objections with evidence and argument. To that extent the concept serves to level the playing field and reduces the likelihood of administrative arbitrariness.

But the ultimate decision that must be made by the PTO in the examination process, and by this court on appeal, is not whether a prima facie case for rejection was made; the only question is whether, on the whole record, the applicant has met the statutory requirements for obtaining a patent. When a final rejection is described in terms of whether a prima facie case was made, that intermediate issue diverts attention from what should be the question to be decided.

Specifically, when obviousness is at issue, the examiner has the burden of persuasion and therefore the initial burden of production. Satisfying the burden of production, and thus initially the burden of persuasion, constitutes the so-called prima facie showing. Once that burden is met, the applicant has the burden of production to demonstrate that the examiner's preliminary determination is not correct. The examiner, and if later involved, the Board, retain the ultimate burden of persuasion on the issue.

If, as a matter of law, the issue is in equipoise, the applicant is entitled to the patent. Thus on appeal to this court as in the PTO, the applicant does not bear the ultimate burden of persuasion on the issue. In the end there is no reason there or here to argue over whether a 'prima facie' case was made out. The only determinative issue is whether the record as a whole supports the legal conclusion that the invention would have been obvious.

- End of Case -

Source: USPQ, 1st Series (1929 - 1986) > U.S. Court of Customs and Patent Appeals > In re Johnson and Farnham, 194 USPQ 187 (C.C.P.A. 1977)

In re Johnson and Farnham, 194 USPQ 187 (C.C.P.A. 1977)

194 USPQ 187

In re Johnson and Farnham
U.S. Court of Customs and Patent Appeals
No. 76-643
Decided June 16, 1977
558 F2d 1008

Headnotes

PATENTS

[1] Claims -- Indefinite -- In general (► 20.551)

Construction of specification and claims -- By prior art (► 22.20)

Analysis of 35 U.S.C. 112 second paragraph rejection should begin with determination of whether claims satisfy requirements of second paragraph; first inquiry, therefore, is to determine whether claims set out and circumscribe particular area with reasonable degree of precision and particularity; it is here where definiteness of language employed must be analyzed, not in vacuum, but always in light of teachings of prior art and of particular application disclosure as it would be interpreted by one possessing ordinary level of skill in pertinent art.

[2] Claims -- Indefinite -- In general (► 20.551)

Claims -- Specification must support (► 20.85)

Undue breadth of claims is not indefiniteness.

[3] Construction of specification and claims -- By specification and drawings -- In general (► 22.251)

Claim language must be read in light of specification as it would be interpreted by one of ordinary skill in art.

[4] Claims -- Indefinite -- In general (► 20.551)

Claims -- Specification must support (► 20.85)

Pleading and practice in Patent Office -- Rejections (► 54.7)

Specification -- Sufficiency of disclosure (► 62.7)

Examiner's rejection premised on general ground that claims are "broader than the express limitation disclosed as defining the invention" and specific grounds that "express disclosure is clearly limited to the sigma value recited in claim 1," raises lack of enablement issue properly arising under first not second paragraph of Section 112.

[5] Specification -- In general (► 62.1)

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Specification -- Claims as disclosure (► 62.3)

It is function of specification, not claims, to set forth "practical limits of operation" of invention; one does not look to claims to find out how to practice invention they define, but to specification.

[6] Claims -- Specification must support (► 20.85)

Construction of specification and claims -- In general (► 22.01)

Specification -- Sufficiency of disclosure (► 62.7)

Specification as whole must be considered in determining whether scope of enablement provided by specification is commensurate with scope of claims.

[7] Construction of specification and claims -- Broad or narrow -- In general (► 22.101)

Patent grant -- Intent of patent laws (► 50.15)

Specification -- Sufficiency of disclosure (► 62.7)

Claims must adequately protect inventors to provide effective incentives; to demand that first to disclose shall limit his claims to what he has found will work or to materials that meet guidelines specified for "preferred" materials in involved process would not serve constitutional purpose of promoting progress in useful arts.

[8] Applications for patent -- Continuing (► 15.3)

Applicants are entitled to benefit of filing date of parent application that discloses invention of application in manner provided by Section 112, paragraph 1.

[9] Claims -- Broad or narrow -- In general (► 20.201)

Estoppel -- Involving interference (► 35.20)

It is for inventor to decide what bounds of protection he will seek; it is applicant's right to retreat to otherwise patentable species merely because he erroneously thought he was first with genus when he filed.

[10] Specification -- Sufficiency of disclosure (► 62.7)

Notion that one who fully discloses, and teaches those skilled in art how to make and

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use genus and numerous species has failed to disclose and teach those skilled in art how to make and use genus minus two species and has thus failed to satisfy Section 112 first paragraph requirement results from hypertechnical application of legalistic prose relating to that provision of statute.

[11] Pleading and practice in Patent Office -- In general (► 54.1)

Specification -- Sufficiency of disclosure (► 62.7)

While insufficiency under 35 U.S.C. 112 cannot be cured by citing causes for insufficiency, it is not true that factual context out of which question under Section 112 arises is immaterial; specification having described whole invention necessarily described part remaining after invention of another was excised.

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Particular Patents

Particular patents -- Polyarylene Polyethers

Johnson and Farnham, Polyarylene Polyethers, rejection of claims 1-9, 64, and 68-72 reversed.

Case History and Disposition

Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of Robert N. Johnson and Alford G. Farnham, Serial No. 230,091, filed Feb. 28, 1972, continuation-in-part of application Serial No. 295,519, filed July 16, 1963. From decision rejecting claims 1-9, 64, and 68-72, applicants appeal. Reversed; Lane, Judge, dissenting in part with opinion.

Attorneys

Robert C. Brown and Aldo J. Cozzi, both of New York, N.Y. (James C. Arvantes, New York, N.Y., of counsel) for appellants.

Joseph F. Nakamura (Henry W. Tarring, II, of counsel) for Commissioner of Patents and Trademarks.

Judge

Before Markey, Chief Judge, and Rich, Baldwin, Lane, and Miller, Associate Judges.

Opinion Text

Opinion By:

Markey, Chief Judge.

This appeal is from the decision of the Patent and Trademark Office (PTO) Board of Appeals affirming the rejection under 35 USC 102 or 103 (the rejection also raises a written description issue under 35 USC 112, first paragraph) of claims 1-9, 64, and 68-70 and the rejection under 35 USC 112, first paragraph (enablement) and second paragraph (indefiniteness), of claims 64 and 68-72 in appellants' application No. 230,091 filed February 28, 1972 (the 1972 application) for "Polyarylene Polyethers."¹ The 1972 application is a continuation-in-part of three earlier applications, the earliest being application No. 295,519 filed July 16, 1963 (the 1963 application). We reverse.

¹ Claims 10-54 and 65-67 stand allowed. A petition for reconsideration was denied by the board.

The Invention

The invention is in the field of polymer chemistry and more specifically relates to linear thermoplastic polyarylene polyether polymers composed of recurring units having the general formula

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where O represents an oxygen atom, ²E represents the residuum of a dihydric phenol ³compound, and E' represents the residuum of a benzenoid compound having one or more inert electron *withdrawing* groups ⁴in the ortho ⁵or para ⁶positions to the valence bonds and where both E and E' are bonded to the ether oxygens through aromatic carbon atoms.

² The - O - linkages in the general formula are called ether linkages.

³ A dihydric phenol is a type of aromatic organic compound in which two hydroxy (-OH) groups are attached directly to a benzene ring.

⁴ An electron *withdrawing* group is a substituent which withdraws electrons from the aromatic ring to which it is attached.

⁵ An aromatic ring bearing substituents on adjacent carbon atoms is called ortho substituted.

⁶ An aromatic ring bearing substituents on opposite carbon atoms is called para substituted.

Appellants describe a method of synthesizing these polymers by reacting a double alkali metal salt of a dihydric phenol with a dihalobenzoid compound in the presence of certain solvents under substantially anhydrous reaction conditions.

The 1972 application includes the following disclosure with respect to the electron *withdrawing* group found in E' and in the E' precursor compound, that is, in the compound which is the predecessor of E' in the above general formula (we have designated paragraphs [A] and [B] and have added emphasis thereto):

Any electron *withdrawing* group can be employed as the activator group in these compounds. It should be, of course, inert to the reaction, but otherwise its structure is not critical. Preferred are the strong activating groups such as the sulfone group

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bonding two halogen substituted benzenoid nuclei as in the 4,4'-dichlorodiphenyl sulfone and 4,4'-difluorodiphenyl sulfone, although such other strong *withdrawing* groups hereinafter mentioned can also be used with equal ease.

The more powerful of the electron *withdrawing* groups give the fastest reactions and hence are preferred. It is further preferred that the ring contain no electron supplying groups on the same benzenoid nucleus as the halogen; however, the presence of other groups on the nucleus or in the residuum of the compound can be tolerated. Preferably, all of the substituents on the benzenoid nucleus are either hydrogen (zero electron *withdrawing*), or other groups having a positive sigma σ value, as set forth in J.F. Bunnett in Chem. Rev. 49 273 (1951) and Quart. Rev., 12, 1 (1958). See also Taft, Steric Effects in Organic Chemistry, John Wiley & Sons (1956), chapter 13; Chem. Rev., 53, 222; JACS, 74, 3120; and JACS, 75, 4231.

⁷ Appellants' brief specifically refers to one of the publications cited (Chem. Rev., 53, 222 [1953]) and

states that its author (Jaffe) defines the sigma α_1 value as a "special substituent constant" for the "Hammett equation" which is an empirically derived formula intended to show a general quantitative relation between the nature of a given substituent and the reactivity of a side chain. Thus, sigma α_2 values are based on experimental data and they measure the "activation energy" of a given substituent (electron withdrawing group).

The electron *withdrawing* group of the dihalobenzoid compound can function either through the resonance of the aromatic ring, as indicated by those groups having a high sigma α_2 value, i.e., above about +0.7 or by induction as in perfluoro compounds and like electron sinks.

[A]

Preferably the activating group should have a high sigma α_3 value, preferably above 1.0, although sufficient activity to promote the reaction is evidenced in those groups having a sigma value above 0.7, although the reaction rate with such a low powered electron withdrawing group may be somewhat low.

The activating group can be basically either of two types:

(a) monovalent groups that activate one or more halogens on the same ring as a nitro group, phenylsulfone, or alkylsulfone, cyano, trifluoromethyl, nitroso, and hetero nitrogen as in pyridine.

(b) divalent group [sic] which can activate displacement of halogens on two different rings, such as the sulfone group

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; the carbonyl group

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; the vinyl group

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; the sulfoxide group

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; the azo group -N=N-; the saturated fluorocarbon groups -CF₂CF₂-; organic phosphine oxides

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; where R is a hydrocarbon group, and the ethyldene group

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where X can be hydrogen or halogen or which can activate halogens on the same ring such as with difluorobenzoquinone, 1,4- or 1,5- or 1,8- difluoroanthraquinone.

[B]

Those skilled in the art will understand that a plurality of electron withdrawing groups may be employed if desired, including electron withdrawing groups having a sigma σ_4 value below about +0.7 provided the cumulative sigma σ_5 influence on each of the reactive halogen groups of the halobenzenoid compound is at least about +0.7.

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The Disclosure and Prosecution History of the 1963 Application

To understand the written description issue in this appeal, it is necessary to summarize the disclosure and prosecution history of the 1963 application. The 1963 application described (and claimed) in haec verba a genus of polymers as defined by the above general formula. That application stated:

The high molecular weight polyarylene polyethers of the present invention are the linear thermoplastic reaction products of an alkali metal double salt of a dihydric phenol and a dihalobenzenoid compound. Characteristically, this polymer has a basic structure composed of recurring units having the formula

-O-E-O-E'-

wherein E is the residuum of the dihydric phenol and E' is the residuum of the benzenoid compound, both of which are valently bonded to the ether oxygen through aromatic carbon atoms, as hereinafter more fully discussed. Polymers of this type exhibit excellent strength and toughness properties as well as outstanding thermal, oxidative and chemical stability.

The 1963 application then discussed the identity of E and the E precursor compound, that is, the compound which is the predecessor of E in the general formula. It stated:

The residuum E of the dihydric phenol of these alkali metal salts is not narrowly critical. It can be, for instance, a mononuclear phenylene group as results from hydroquinone and resorcinol, or it may be a di- or polynuclear residuum. Likewise it is possible that the residuum be substituted with other inert nuclear substituents such as halogen, alkyl, alkoxy and like inert substituents.

Such dinuclear phenols can be characterized as having the structure:

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wherein Ar is an aromatic group and preferably is a phenylene group, Y and Y' can be the same or different inert substituent groups as alkyl groups having from 1 to 4 carbon atoms, halogen atoms, i.e. fluorine, chlorine, bromine or iodine, or alkoxy radicals having from 1 to 4 carbon atoms, r and z are integers having a value from 0 to 4, inclusive, and R is representative of a bond between aromatic carbon atoms as in dihydroxydiphenyl, or is a divalent radical, including for example, inorganic radicals as

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, -O-, -S-, -S-S-, -SO₂-, and divalent organic hydrocarbon radicals such as alkylene, alkylidene,

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cycloaliphatic, or the halogen, alkyl, aryl or like substituted alkylene, alkylidene and cycloaliphatic radicals as well as alkalicyclic, alkarylene and aromatic radicals and a ring fused to both Ar group[s].

The application then mentioned by name some fifty specific dihydric dinuclear phenol (bisphenol) compounds which could be the E precursor compound. The application further stated:

A preferred form of the polyarylene polyethers of this invention are those prepared using the dihydric polynuclear phenols of the following four types, including the derivatives thereof which are substituted with inert substituent groups

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in which the R group represents hydrogen, lower alkyl, lower aryl and the halogen substituted groups thereof, which can be the same or different.

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Turning to the identity of the E' precursor compound, the application stated:

Any dihalobenzoid compound or mixture of dihalobenzoid compounds

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can be employed in this invention which compound or compounds has the two halogens bonded to benzene rings having an electron *withdrawing* group in at least one of the positions ortho and para to the halogen group. The dihalobenzoid compound can be either mononuclear where the halogens are attached to the same benzenoid ring or polynuclear where they are attached to different benzenoid rings, as long as there is the activating electron *withdrawing* group in the ortho or para position of that benzenoid nucleus.

The 1963 application also included a discussion of the electron *withdrawing* group that was substantially the same as the paragraphs quoted above from the 1972 application.

The 1963 application contained twenty-six "examples" disclosing in detail the physical and chemical characteristics of fifteen species of polyarylene polyethers. One of the species was the polymer composed of these recurring structural units (which we designate as species [1]):⁸

⁸ The -SO₂- linking group in species [1] is called a sulfone group.

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Another species disclosed was the polymer composed of these recurring structural units (which we designate as species [2]):⁹

⁹ The -CO- linking group in species [2] is called a carbonyl group.

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Appellants' 1963 application became involved in a three-party interference ¹⁰ which resulted in an award of priority adverse to appellants from which they did not appeal. ¹¹] The sole count of the interference recited species [1].

¹⁰ Interference No. 95,807, declared February 17, 1967.

¹¹ Another party did appeal. See *Vogel v. Jones*, 486 F.2d 1068, 179 USPQ 425 (CCPA 1973).

After their involvement in the interference ended, appellants filed the 1972 application, and they sought broad claims which would at the same time exclude the subject matter of the lost count.

The Claims

Claim 1, now on appeal, is illustrative of the group of claims (claims 1-9, 64, and 68-70) which seek to exclude the subject matter of the lost count and which are involved in the 35 USC 102 or 103 rejection:

1. A substantially linear thermoplastic polyarylene polyether composed of recurring units having the general formula:

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where E is the residuum of a dihydric phenol and E' is the residuum of a benzenoid compound having an inert electron withdrawing group in one or more of the positions ortho and para to the valence bonds having a sigma σ_1 value above about +0.7, and where both of said residuum [sic, residua] are valently bonded to the ether oxygens through aromatic carbon atoms with the provisos that E and E' may not both include a divalent sulfone group and may not both include a divalent carbonyl group linking two aromatic nuclei. [Emphasis added.]

The first "proviso" in claim 1, that "E and E' may not both include a divalent sulfone group," excludes species [1], the species of the lost count. The second "proviso," that "E and E' * * * may not both include a divalent carbonyl group," excludes species [2], which appellants state is "analogous" or "equivalent" to species [1]. ¹²

¹² The provisos actually exclude more than species [1] and [2]. For example, polymers similar to species [1] and [2] but having substituted ring structures are also excluded.

Claims 64 and 71 are illustrative of the group of claims (claims 64 and 68-72) rejected under 35 USC 112, first and second paragraphs:

64. A substantially linear thermoplastic polyarylene polyether composed of recurring units having the general formula:

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where E is the residuum of a dihydric phenol and E' is the residuum of a

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benzenoid compound having one or more inert electron withdrawing groups in at least one of the position [sic, positions] ortho and para to the valence bonds having a sigma σ_1 value sufficient to activate a halogen atom and where both of said residuum [sic, residua] are valently bonded to the ether oxygens through aromatic carbon atoms with the provisos that E and E' may not both include a divalent carbonyl group linking two aromatic nuclei. [Emphasis added.]

71. The process for preparing substantially linear polyarylene polyethers which comprises reacting substantially equimolar amounts of an alkali metal double salt of a dihydric phenol with a dihalobenzenoid compound having halogen atoms activated by an inert electron withdrawing group in at least one of the positions ortho and para to the halogen atom, under substantially anhydrous conditions and in the liquid phase of an organic solvent having the formula:

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in which R represents a member of the group consisting of monovalent lower hydrocarbon groups free of aliphatic unsaturation on the alpha carbon atom and, when connected together represents a divalent alkylene group, and Z is an integer from 1 to 2 inclusive. [Emphasis added.]

The Rejections

The sole reference relied upon by the examiner and the board is:

Netherlands 6,408,130 January 18, 1965

Claims 1-9, 64, and 68-70 were rejected under 35 USC 102 or 103 as unpatentable in view of the Netherlands patent, which is a foreign-filed counterpart of appellants' 1963 application.

Before the PTO, appellants conceded that the invention was fully disclosed in the Netherlands patent. However, appellants contended that the claims are entitled to the benefit of the 1963 filing date under 35 USC 120,¹³ and therefore the Netherlands patent is not available as a prior art reference.

¹³ § 120. Benefit of earlier filing date in the United States.

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States by the same inventor shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application. [Emphasis added.]

The examiner and the board were of the view that the claims are not entitled to the 1963 filing date because the presently claimed subject matter is not "described" in the 1963 application as required by the first paragraph of 35 USC 112.¹⁴ As explained by the board:

¹⁴ § 112. Specification.

The specification shall contain a *written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same,* and shall set forth the best mode contemplated by the inventor of carrying out his invention. [Emphasis added.]

The question determinative of the issue at hand is thus whether or not appellants are entitled to the filing date of their parent application Serial No. 295,519, i.e., July 16, 1963. An answer to this question quite obviously depends on what is the invention defined by the instant claims. Is it the same as the one disclosed in [the] parent case or does it differ therefrom in a manner which precludes the instant claims from being afforded the filing date of the parent case?

Under the rationale of the CCPA as set forth in *In re Welstead*, 59 CCPA 1105, 463 F.2d 1110, 174 USPQ 449 (compare also *In re Lukach et al.*, 58 CCPA 1233, 442 F.2d 967, 169 USPQ 795, and *In re Smith [(I)]*, 59 CCPA 1025, 458 F.2d 1389, 173 USPQ 679), which we deem controlling, we are constrained to conclude that the present claims are not entitled to the filing date of appellants' parent case Serial No. 295,519. The claims at issue contain provisos that E and E' may not both include a divalent sulfone group and may not both include a divalent carbonyl group linking two aromatic nuclei. The artificial subgenus thus created in the claims is not described in the parent case and would be new matter if introduced into the parent case. It is thus equally "new matter," i.e., matter new to the present application for

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which no antecedent basis exists in the parent case. Consequently, appellants are not entitled to rely on the filing date of their parent case to support a new subgenus for which no basis exists in the parent case. The reason why appellants now limit their claims to exclude those species eliminated by the provisos, i.e., loss in an interference, is manifestly immaterial.

Having reached the conclusion that appellants are not entitled to the filing date of their parent case for the subject matter defined by the present claims which delineate a new subgenus not described in the parent case, it follows that the Netherlands patent is a valid reference which, by appellants' own admission, fully meets the claims. The indicated rejection of claims 1-9, 64 and 68-70 under 35 U.S.C. 102 as unpatentable over the Netherlands patent is thus *affirmed*. The alternative reliance by the Examiner on Section 103 is inconsequential, Section 102 of the statute being the epitome of Section 103. *In re Pearson*, (CCPA), 494 F.2d 1399, 181 USPQ 641.

Claims 64 and 68-72 were rejected under 35 USC 112, first and second paragraphs. In his Answer, the examiner stated that the claims were rejected under § 112, first paragraph, for "being broader than the enabling disclosure" and under § 112, second paragraph,¹⁵ for being "broader than the express limitations disclosed as defining the invention." The examiner said the "specific deficiencies of the claims and disclosure" are that the expression "to activate a halogen" (claim 64) is "indefinite" because "it does not specify toward what the activation is" and that "[t]he express disclosure is clearly limited to the sigma[a1] value recited in claim 1, for example: see [[A] and [B]]."

¹⁵ § 112. Specification.

* * *

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

In affirming the examiner on these rejections, the board stated:

Further, claims 64 and 68-72 stand finally rejected under 35 U.S.C. 112 as being broader than the enabling disclosure (first paragraph) and broader than the express limitations disclosed as defining the invention (paragraph two).

It is the Examiner's position that "to activate a halogen atom" (claim 64) is indefinite and that the disclosure also is limited to dihalobenzoid compounds not broadly merely "activated by an inert electron *withdrawing* group" (claims 68-72) but the activation must have a sigma a₂value above about +0.7.

We agree with this rejection. The specification makes it quite clear that a minimum sigma a₃activation value of the halogen atoms is required (note especially [[A]]) and an undefined sigma a₄value thus lacks the requisite *preciseness* commensurate with the enablement of the disclosure.

Opinion

I. The Rejections of Claims 64 and 68-72 under § 112

Claims 64 and 68-72 were rejected under both the first and second paragraphs of 35 USC 112.

[1] We begin with the rejections under the second paragraph of § 112. As stated in *In re Moore*, 58 CCPA 1042, 1046-1047, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (1971):

Any analysis in this regard should begin with the determination of whether the claims satisfy the requirements of the second paragraph. * * *

This first inquiry therefore is merely to determine whether the claims do, in fact, set out and circumscribe a particular area with a reasonable degree of precision and particularity. It is here where the definiteness of the language employed must be analyzed -- not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art. [Footnote omitted.]

The examiner's § 112, second paragraph, rejection was premised on the general ground that the claims are "broader than the express limitations disclosed as defining the invention" and on two specific grounds: (a) that the expression "to activate a halogen atom" is "indefinite" because "it does not specify toward what the activation is;" and (b) that "[t]he express disclosure is clearly limited to the sigma[a₅] value recited in claim 1, for example: see [[A] and [B]]." The board *affirmed* and stated: "an undefined sigma a₆value thus lacks the requisite *preciseness* * * *." (Emphasis added.)

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Ground (a) focuses on the specific phrase "to activate a halogen atom." But the language is found only in

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claim 64, not in claims 68-72. Claim 68 recites "a dihalobenzenoid compound having halogen atoms activated by an inert electron *withdrawing group*," and claims 71 and 72 have a similar recitation. (Claims 69 and 70 depend from claim 68.) Those recitations clearly specify "toward what the activation is," as the examiner would require. Ground (a), therefore, lacks merit with respect to claims 68-72.

[2] Product claim 64¹⁶ defines the complete polymer structure by describing the constituents partially in terms of their functions in the reaction and by their linkage into the end-product polymer. The specification provides further guidance on the meaning of the E' term:

¹⁶ Claims 68-70 are product-by-process claims.

It is seen also that as used herein, the E' term defined as being the "residuum of the benzenoid compound" refers to the aromatic or benzenoid residue of the compound *after the removal of the halogen atoms on the benzenoid nucleus*. [Emphasis added.]

It is also clear from the specification as a whole, that two keys to the polymerization reaction are inert electron *withdrawing groups* particularly positioned on the benzenoid nucleus and a cumulative sigma a1value attributable to those *withdrawing groups* which is sufficient to activate a halogen atom on that nucleus. If the sigma a2value is not sufficient to activate a halogen atom on the benzenoid nucleus, the reaction will not take place and the polymer will not be made. See *In re Angstadt*, 537 F.2d 498, 190 USPQ 214 (CCPA 1976). The specification adequately details which sigma a3values are sufficient to carry out the reaction, and any person skilled in the art would immediately recognize from the above-quoted portion of the disclosure or the specification as a whole that the halogen atom mentioned in claim 64 was on the benzenoid nucleus prior to the reaction. It is clear that those skilled in the art would have no trouble ascertaining whether any particular polymer falls within the scope of claim 64. See *In re Goffe*, 526 F.2d 1393, 188 USPQ 131 (CCPA 1975). The questioned limitation is merely surplusage, since the claim would be definite with or without it.¹⁷

¹⁷ We do not speculate on whether or not the claim would be unduly broad if the questioned limitation were removed. But undue breadth is not indefiniteness. *In re Borkowski*, 57 CCPA 946, 422 F.2d 904, 164 USPQ 642 (1970). This claim is definite either with or without the phrase "to activate a halogen atom."

[3] The point made by the board, that "an undefined sigma a4value" lacks "preciseness," is also unsound.¹⁸ Claim language must be read in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Moore*, *supra*. As pointed out above, those skilled in the art will be able to determine immediately from appellants' detailed specification what level of activation (i.e., sigma a5value) is necessary to practice the invention. Cf. *In re Mattison*, 509 F.2d 563, 184 USPQ 484 (CCPA 1975). We conclude that the subject matter embraced by claims 64 and 68-72 is definite and that the claims set out and circumscribe a particular area with a reasonable degree of precision and particularity. *In re Angstadt*, *supra*; *In re Skoll*, 523 F.2d 1392, 187 USPQ 481 (CCPA 1975); *In re Watson*, 517 F.2d 465, 186 USPQ 11 (CCPA 1975); *In re Moore*, *supra*. Therefore, the rejection of claims 64 and 68-72 under the second paragraph of 35 USC 112 is reversed.

¹⁸ *In re Merat*, 519 F.2d 1390, 186 USPQ 471 (CCPA 1975), cited by the Solicitor, affirmed a § 112, second paragraph, rejection because the same word ("normal") was used in the claims in one sense and in the specification in a different sense, thus rendering the claims indefinite. There is nothing akin to the

Merat situation here.

[4] The examiner's general ground and his ground (b) raise a lack of enablement issue properly arising under the *first*, not the second, paragraph of § 112. Ground (b) simply supplies the examiner's reasoning in support of the rejection of the claims under § 112, first paragraph, as "broader than the enabling disclosure."

As appellants state, the crux of this lack of enablement rejection is that although the specification describes how the halogen atoms bonded to the dihalobenzoid compound (the E' precursor compound) must be activated in order for polymerization to occur, the claims at issue do not recite a numerical definition of the degree of activation (a minimum sigma a6value) required from the electron *withdrawing* group. The PTO position is that the claims must recite a minimum sigma a7value in order to conform the scope of the claims to the scope of enablement provided by the specification. The PTO relies on statements [A] and [B] to prove that the scope of enablement

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provided by the specification is not commensurate with the scope of the claims.

[5] First, we note that it is the function of the specification, not the claims, to set forth the "practical limits of operation" of an invention. *In re Rainer*, 49 CCPA 1243, 1248, 305 F.2d 505, 509, 134 USPQ 343, 346 (1962). One does not look to claims to find out how to practice the invention they define, but to the specification. *In re Roberts*, 470 F.2d 1399, 1403, 176 USPQ 313, 315 (CCPA 1973); *In re Fuetterer*, 50 CCPA 1453, 319 F.2d 259, 138 USPQ 217 (1963).

[6] Second, we note that the specification as a *whole* must be considered in determining whether the scope of enablement provided by the specification is commensurate with the scope of the claims. *In re Moore*, *supra* at 1047, 439 F.2d at 1235, 169 USPQ at 238-39.

The present specification includes broad statements such as: "Any electron *withdrawing* group can be employed as the activator group in these compounds." The specification also discusses preferred embodiments, alternative embodiments, and the practical limits of operation.

Statement [A] describes preferred embodiments and practical limits of operation. It says that electron *withdrawing* groups having a high sigma a1value ("preferably above 1.0") are preferred and that the practical limit of operation of the polymerization reaction is reached when the electron *withdrawing* group has a sigma a2value of 0.7 (at that value the reaction rate "may be somewhat low").

Statement [B] describes an alternative embodiment ("a plurality of electron *withdrawing* groups") and the practical limit of operation for this embodiment. It states that the cumulative sigma a3influence should be "at least about +0.7."

[7] The PTO would limit appellants to claims reciting a sigma a4value of at least 0.7. This view is improper because it requires the claims to set forth the practical limits of operation for the invention and it effectively ignores the scope of enablement provided by the specification as a whole. As we said in *In re Goffe*, 542 F.2d 564, 567, 191 USPQ 429, 431 (CCPA 1976):

[T]o provide effective incentives, claims must adequately protect inventors. To demand that the first to disclose shall limit his claims to what he has found will work or to materials which meet the guidelines specified for "preferred" materials in a process such as the one herein involved would not serve the constitutional purpose of promoting progress in the useful arts. See *In re Fuetterer*, 50 CCPA 1453, 1462, 319 F.2d 259, 265, 138 USPQ 217, 223 (1963). [Footnote omitted.]

The rejection of claims 64 and 68-72 under the *first* paragraph of 35 USC 112 is reversed.

II. The Rejection of Claims 1-9, 64, and 68-70 Under § 102 or § 103, Raising Issues Under § 112 and § 120

[8] We are convinced that the invention recited in claim 1 is "disclosed in the manner provided by the first paragraph of section 112" in the 1963 application and that claim 1 is therefore entitled to the benefit of the 1963 filing date.¹⁹ The only inquiry is whether, after exclusion from the original claims of two species specifically disclosed in the 1963 application, the 1963 disclosure satisfies § 112, first paragraph, for the "limited genus"²⁰ now claimed.

¹⁹ Appellants have not argued the claims separately, thus, claims 2-9, 64, and 68-70 stand or fall with claim 1.

²⁰ Appellants refer to the subject matter recited in claim 1 as a "limited genus." The board called it an "artificial subgenus." We use appellants' terminology. Whatever the label, the issue is the same.

While the board found that "no antecedent basis exists in the parent case" for the "limited genus" in claim 1, we see more than ample basis for claims of such scope. The 1963 disclosure is clearly directed to polymers of the type claimed. Fifty specific choices are mentioned for the E precursor compound, a broad class is identified as embracing suitable *choices* for the E' precursor compound, and twenty-six "examples" are disclosed which detail fifteen species of polyarylene polyethers. Only fourteen of those species and twenty-three of the "examples" are within the scope of the claims now on appeal. Two of the many choices for E and E' precursor compounds are deleted from the protection sought, because appellant is *claiming less* than the full scope of his disclosure. But, as we said in *In re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976):

Inventions are constantly made which turn out not to be patentable, and applicants frequently discover during the course of prosecution that only a part of what they invented and originally claimed is patentable.

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[9] It is for the inventor to decide what *bounds* of protection he will seek. *In re Saunders*, 58 CCPA 1316, 1327, 444 F.2d 599, 607, 170 USPQ 213, 220 (1971). To deny appellants the benefit of their grandparent application in this case would, as this court said in *Saunders*:

* * * let form triumph over substance, substantially eliminating the right of an applicant to retreat to an otherwise patentable species merely because he erroneously thought he was first with the genus when he filed.

The board cited as "controlling" the decisions of this court in *In re Welstead*, 59 CCPA 1105, 463 F.2d 1110, 174 USPQ 449 (1972); *In re Lukach*, 58 CCPA 1233, 442 F.2d 967, 169 USPQ 795 (1971); and *In re Smith*, 59 CCPA 1025, 458 F.2d 1389, 173 USPQ 679 (1972). Those decisions, because of important factual distinctions, are not controlling.

In *Welstead* the applicant was attempting to introduce into his claims a new subgenus where " * * * the specification * * * contained neither a description * * * of the [subgenus] * * * nor descriptions of the species thereof amounting in the aggregate to the same thing * * *." *Welstead* conceded the absence from his disclosure of compounds of the "second type" within the new subgenus. *Welstead* is thus clearly

distinguishable from the present case, in which appellants' grandparent application contains a broad and complete generic disclosure, coupled with extensive examples fully supportive of the limited genus now claimed. Indeed, Welstead might have well been cited by the board in support of a decision contrary to that reached, in view of what this court there implied concerning the possibility that "descriptions of species amounting in the aggregate to the same thing" may satisfy the description requirements of 35 USC 112, paragraph one.

Similarly, in Lukach we noted that "the grandparent application here does not disclose any defined genus of which the presently claimed copolymers are a subgenus." That is not the fact here. Appellants' grandparent application clearly describes the genus and the two special classes of polymer materials excluded therefrom.

In Smith the applicant sought the benefit of his prior application for a broadened generic claim, replacing the claim limitation "at least 12 carbon atoms" with a new limitation calling specifically for 8 to 36 carbon atoms, where there was no disclosure of either the range itself or of a sufficient number of species to establish entitlement to the claimed range. Appellants, in contrast to the applicant in Smith, are narrowing their claims, and the full scope of the limited genus now claimed is supported in appellants' earlier application, generically and by specific examples.

[10] The notion that one who fully discloses, and teaches those skilled in the art how to make and use, a genus and numerous species therewithin, has somehow failed to disclose, and teach those skilled in the art how to make and use, that genus minus two of those species, and has thus failed to satisfy the requirements of § 112, first paragraph, appears to result from a hypertechnical application of legalistic prose relating to that provision of the statute. All that happened here is that appellants narrowed their claims to avoid having them read on a lost interference count.

[11] The board indicated that "it is manifestly immaterial" why appellants limited their claims. Though it is true that insufficiency under § 112 could not be cured by citing the causes for such insufficiency, it is not true that the factual context out of which the question under § 112 arises is immaterial. Quite the contrary. Here, as we hold on the facts of this case, the "written description" in the 1963 specification supported the claims in the absence of the limitation, and that specification, having described the whole, necessarily described the part remaining. The facts of the prosecution are properly presented and relied on, under these circumstances, to indicate that appellants are merely excising the invention of another, to which they are not entitled, and are not creating an "artificial subgenus" or claiming "new matter."

In summary, and for the reasons discussed, the rejections of claims 64 and 68-72 under § 112, first and second paragraphs, are reversed; appellants' 1963 disclosure satisfied § 112, first paragraph, with respect to claims 1-9, 64, and 68-70 and appellants are, therefore, entitled to the benefit of their 1963 filing date under 35 USC 120. The Netherlands patent is thus rendered unavailable as a prior art reference, and the rejection of the claims under 35 USC 102 or 103 is reversed.

Dissenting Opinion Text

Dissent By:

Lane, Judge, dissenting in part,

I would affirm the rejection of claims 64 and 68-72 under § 112, paragraphs 1 and 2, because the specification indicates that a

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minimum sigma value of +0.7 is an *essential requisite*. These claims fail to recite this requisite, thus fail to define appellants' invention and are broader than the disclosure. I concur in reversing the rejection of claims 1-9.

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In re Wertheim, et al., 191 USPQ 90 (C.C.P.A. 1976)

191 USPQ 90

In re Wertheim, et al.

U.S. Court of Customs and Patent Appeals

No. 75-536

Decided August 26, 1976

541 F2d 257

Headnotes

PATENTS

[1] Applications for patent — Continuing (► 15.3)

Patentability — Anticipation — Carrying date back of references (► 51.203)

Patentability — Anticipation — Patents — In general (► 51.2211)

Specification — Sufficiency of disclosure (► 62.7)

Claims are entitled to filing dates of parent application under 35 U.S.C. 120 and foreign application that was filed less than one year before parent application under 35 U.S.C. 119 if parent and foreign applications comply with 35 U.S.C. 112, first paragraph, including description requirement, as to claims' subject matter.

[2] Foreign patents (► 38.)

Patentability — Anticipation — Carrying date back of references (► 51.203)

Specification — Sufficiency of disclosure (► 62.7)

All 35 U.S.C. 119 requires is that foreign application describe and seek protection for broadly same invention as described in U.S. application claiming its benefit.

[3] Court of Customs and Patent Appeals — Issues determined — In general (► 28.201)

Court of Customs and Patent Appeals — Issues determined — Ex parte patent cases (► 28.203)

Court of Customs and Patent Appeals, in interests of judicial economy, declines entreaty to determine whether decision's broad rule is still valid, since stated issue is dispositive regardless of decision's validity in its own factual setting; court need not separately decide sufficiency of parent U.S. application of applicants who must have benefit of their foreign application, which contains disclosure regarding limitations that is virtually identical to parent application's, to antedate reference patent.

[4] Specification — Sufficiency of disclosure (► 62.7)

Description requirement's function is to ensure that inventor possessed, as of filing date of application relied on, specific subject matter later claimed by him, but how specification accomplishes this is not material; application need not describe claim limitations exactly, but only so clearly that persons of

ordinary skill in art will recognize from disclosure that applicants invented processes including those limitations.

[5] Amendments to patent application — In general (► 13.1)

Specification — Sufficiency of disclosure (► 62.7)

Primary consideration, in determining whether application describes claim limitations sufficiently clearly that persons of ordinary skill in art will recognize from disclosure that applicants invented processes including those limitations, is factual and depends on invention's nature and amount of knowledge imparted to those skilled in art by disclosure; broadly articulated rules are particularly inappropriate in this area; mere comparison of ranges is not enough, nor are mechanical rules substitute for analysis of each case on its facts to determine whether application conveys to those skilled in art information that applicants invented claims' subject matter; court must decide whether invention applicants seek to protect by their claims is part of invention they described as theirs in specification; fact that what applicants claim as patentable to them is less than what they describe as their invention is not conclusive if their specification also reasonably describes what they do claim; form would otherwise triumph over substance, substantially eliminating applicant's right to retreat to otherwise patentable species merely because he erroneously thought he was first with genus when he filed; patent law provides for amending claims as well as specification during prosecution, so that 35 U.S.C. 112, second paragraph, "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention" does not prohibit applicant from changing what he regards as invention, or subject matter on which he seeks patent protection, during application's pendency.

[6] Patentability — Anticipation — Carrying date back of references (► 51.203)

Pleading and practice in Patent Office — Rejections (► 54.7)

Specification — Sufficiency of disclosure (► 62.7)

As in cases involving section 112 enablement requirement, Patent and Trademark Office has initial burden of presenting evidence or reasons why persons skilled in art would not recognize in disclosure description of invention defined by claims; pointing to fact that claim reads on embodiments outside description's scope satisfies burden, so that applicants whose claim recites solids content range of "at least 35%" and whose foreign application described 25-60% range have burden of showing that 60% upper limit of solids content described is inherent in claim's limitation "at least 35%"; it is immaterial in ex parte prosecution whether same or similar claims were allowed to others.

[7] Interference — Interference in fact (► 41.40)

Specification — Claims as disclosure (► 62.3)

Specification — Sufficiency of disclosure (► 62.7)

Originally filed claim in appealed application is its own written description; disclosure of patent issued after applicants' foreign application is not evidence of what those skilled in art considered conventional at time foreign application was filed for Section 112 purposes; fact that claim's limitation is not material does not matter when limitation is copied; immateriality excuses only failure to copy patent claim's limitation.

[8] Specification — Sufficiency of disclosure (► 62.7)

There is important practical distinction between broad generic chemical compound inventions in which each compound within genus is separate embodiment of invention, and invention in which range of solids content is but one of several process parameters; broader range does not describe narrower range where broad described range pertains to different invention than narrower and subsumed claimed range.

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[9] Patentability — Anticipation — Carrying date back of reference (► 51.203)

Pleading and practice in Patent Office — Rejections (► 54.7)

Specification — Sufficiency of disclosure (► 62.7)

Fact that applicants' foreign application describes invention as employing solids contents within 25-60% range along with specific embodiments of 36% and 50% warrants conclusion, in context of process for making freeze-dried instant coffee from concentrated coffee, that persons skilled in art would consider claimed process employing 35-60% solids content range to be part of invention; Patent and Trademark Office's mere argument of lack of literal support is not enough; In re Lukach, 169 USPQ 795, statement that invention claimed does not have to be described in *ipsis verbis* in order to satisfy 35 U.S.C. 112 description requirement would be empty verbiage if lack of literal support alone were enough to support 35 U.S.C. 112 rejection; burden of showing that claimed invention is not described in specification rests on Patent and Trademark Office in first instance, and it is up to it to give reasons why description not in *ipsis verbis* is insufficient.

[10] Amendments to patent application — New matter (► 13.5)

Pleading and practice in Patent Office — Rejections (► 54.7)

Specification — Sufficiency of disclosure (► 62.7)

New matter rejection resting on Patent and Trademark Office's conclusion that application as filed did not describe limitation is tantamount to rejection on 35 U.S.C. 112, first paragraph, description requirement.

[11] Patentability — Anticipation — In general (► 51.201)

Patentability — Invention — In general (► 51.501)

Pleading and practice in Patent Office — Rejections (► 54.7)

Disclosure in prior art of any value within claimed range is anticipation of claimed range; fact that rejections are under 35 U.S.C. 103 rather than 102 requires considering whether applicants' invention and patent's disclosure are directed to different purposes and whether persons of ordinary skill in art would not look to reference patent's grandparent application for solution to problem addressed by applicants.

[12] Patentability — Invention — In general (► 51.501)

Applicants may not use rationale, that patent and its grandparent application gave no hint of inventive concept of regulating product bulk density to show unobviousness without antecedent basis for it in their application.

[13] Patentability — Invention — Specific cases — In general (► 51.5091)

It would be obvious to reduce size of coffee foam particles by suitable mechanical means to desired end product size, in process for making freeze-dried instant coffee, before, rather than after drying.

[14] Patentability — Invention — In general (► 51.501)

Applicants whose claim requires freezing over 7 to 25 minute period and who indicate that this produces coffee "having pleasant dark colour" have not overcome *prima facie* case of obviousness made out by reference disclosing instantaneous freezing, absent showing that only their claimed freezing time

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produces coffee of pleasant dark color.

[15] Patentability — Invention — In general (► 51.501)

Pleading and practice in Patent Office — Rejections (► 54.7)

Specification — Sufficiency of disclosure (► 62.7)

Fact that persons skilled in art may not know how to ensure claimed final product densities from specification is pertinent only to rejection on 35 U.S.C. 112, first paragraph, enablement requirement, and not to whether limitation distinguishes prior art under Section 103.

[16] Patentability — Anticipation — Patent application (► 51.219)

Specification — In general (► 62.1)

Applicants' disclosure may not be used against them as prior art absent admission that matter disclosed in specification is in prior art.

[17] Claims — Article defined by process of manufacture (► 20.15)

Patentability — Invention — In general (► 51.501)

Court of Customs and Patent Appeals does not subscribe to broad proposition that process limitations can never serve to distinguish apparatus claims' subject matter from prior art.

[18] Patentability — Anticipation — Patents — In general (► 51.2211)

Prior art patents are to be viewed for what they disclose in their entireties and not merely for their inventive contributions to art.

[19] Claims — Article defined by process of manufacture (► 20.15)

Patentability — Invention — In general (► 51.501)

Pleading and practice in Patent Office — Rejections (► 54.7)

Patentability of products defined by product-by-process claims, and not processes for making them, is what must be gauged in light of prior art; fact that some products covered by applicants' product-by-process claims may not be suggested by reference patent's grandparent application that completely discloses other subject matter embraced by applicants' claims is not relevant to patentability, complete disclosure in prior art being epitome of obviousness; fact that applicants do not contend that they could not understand basis for rejection because of Patent and Trademark Office's failure to give clear reasons for its action under 35 U.S.C. 132 and explanations given by examiner and Board of Appeals were legally ample under section warrants conclusion that claims that were allegedly improperly grouped with other claims were subject of proper rejection.

Particular Patents

Particular patents —Drying Method

Wertheim and Mishkin, Drying Method, rejection of claims 1, 4, 6-16, 21-28, 30-35, and 40-43 *affirmed*; rejection of claims 2, 17-20, 29, 37, and 38 *reversed*; *appeal dismissed* as to claims 3, 5, 36, and 39.

Case History and Disposition

Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of John H. Wertheim and Abraham R. Mishkin, Serial No. 96,285, filed Dec. 8, 1970, continuation of application, Serial No. 537,679, filed Mar. 28, 1966, claiming benefit of Swiss application filed Apr. 2, 1965. From decision rejecting claims 1, 2, 4, 6-35, 37, 38, and 40-43, applicants appeal. Modified; Baldwin and Miller, Judges, dissenting in part with opinions.

Attorneys

William H. Vogt III, and Watson Leavenworth Kelton & Taggart, both of New York, N.Y. (Paul E. O'Donnell, Jr., New York, N.Y., of counsel) for appellants.

Joseph F. Nakamura (Gerald H. Bjorge, of counsel) for Commissioner of Patents and Trademarks.

Judge

Before Markey, Chief Judge, and Rich, Baldwin, Lane, and Miller, Associate Judges.

Opinion Text

Opinion By:

Rich, Judge.

This appeal is from the decision of the Patent and Trademark Office (PTO) Board of Appeals affirming the final rejection of claims 1-43, all the claims in application serial No. 96,285, filed December 8, 1970, entitled "Drying Method." ¹The appeal on claims 3, 5, 36, and 39 has been withdrawn, and as to these claims it is, therefore, dismissed. As to the remaining claims, we affirm in part and reverse in part.

¹ A continuation (or continuation-in-part, as the examiner has required it to be denominated) of application serial No. 537,679, filed March 28, 1966. Appellants claim the benefit of a Swiss application filed April 2, 1965. The title of the application on appeal is somewhat inaccurate, as the application contains claims to apparatus for drying and dried instant coffee products as well as to a drying method.

The Invention

Appellants' invention centers around a process for making freeze-dried instant coffee. Claims 1, 6, 30, and 40 are illustrative:

1. An improved process for minimising loss of volatiles during freeze-drying of coffee extract which comprises obtaining coffee extract, concentrating said extract to a higher solids level of at least 35%, foaming said concentrated extract to a substantial overrun by injection of a gas into said extract at at least atmospheric pressure to thereby avoid evaporative cooling due to evaporation of water in said extract during said foaming, freezing said foam to below its eutectic point at at least atmospheric pressure while avoiding evaporative cooling, and freeze-drying said extract at below the eutectic temperature of said extract.

6. Process for preparing a powdered coffee extract, which comprises adding sufficient inert gas to a concentrated aqueous extract of roast coffee containing about 25% to 60% by weight of soluble

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coffee solids to provide a foam having a density between about 0.4 and 0.8 gm/cc, freezing the foamed extract to a solid mass, grinding the frozen foam to a particle size of at least 0.25 mm and freeze drying the ground frozen foam.

30. An apparatus for carrying out the process defined in claim 6 comprising, in combination, means for foaming, a closed chamber capable of being maintained at a temperature which is substantially below the melting temperature of said frozen foam, and, disposed within said chamber, a movable endless belt, means for moving said belt at a low speed, a spreading device for distributing coffee extract foam on said belt and refrigerating means for cooling at least one surface of said belt with a liquid refrigerant.

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40. A dry coffee powder comprising a freeze-dried particulated foamed extract of roast and ground coffee, the foam before freeze drying having a density between about 0.4 and 0.8 gm/cc.

The remaining claims are reproduced in the Appendix hereto. Appellants assert that their invention produces an instant coffee having a bulk density of 0.2-0.3 gm/cc, which corresponds to that of conventional spray-dried instant coffee.² They allege they discovered that this desired bulk density results from controlling the solids content of the concentrated extract prior to foaming and the density of the foam generated therefrom within the range of their freeze-drying process claims.

² So that consumers may continue to use the same amount of freeze-dried instant coffee per cup as conventional instant coffee without change in the strength of the beverage that they are accustomed to.

Since the claims are somewhat elliptical in setting out the steps of appellants' process, we shall describe it further. An aqueous extract of coffee is prepared by percolating hot water through roasted and ground coffee beans. The extract is concentrated to have a solids content between 25% and 60% and is then charged with gas to produce a foam having a density between 0.4 and 0.8 gm/cc. The foam is frozen and ground into particles, preferably 0.25 to 2.0 mm in size, which are freeze-dried by conventional techniques.

Prosecution History and Rejections

The claims which remain on appeal fall into two broad groups: The "interference" claims, 1, 2, 4, 37, and 38; and the "non-interference" claims, 6-35 and 40-43.

As originally filed, the application contained claims 1-5 copied from Pfluger et al. U. S. Patent No. 3,482,990 (Pfluger patent), issued December 9, 1969, on an application filed February 10, 1969. A letter under Rule 205(a), 37 CFR 1.205(a), requesting an interference with the Pfluger patent accompanied the application. By amendment, appellants transferred claims 6-35 from their 1966 application to the instant application. Claims 36-39, added by amendment, are modified versions of the previously copied claims and were presented for the purpose of providing a basis for phantom counts in an interference with the Pfluger patent under Rule 205(a) and Manual of Patent Examining Procedure § 1101.02. They depend from claim 2.

The patents relied on by the examiner are:

Table set at this point is not available. See table in hard copy or call BNA at 1-800-372-1033.

The Pfluger patent issued on a chain of four applications: serial No. 800,353, filed Feb. 10, 1969, which was a continuation of serial No. 520,347, filed Jan. 13, 1966 (Pfluger 1966), which was a continuation-in-part of serial No. 309,410, filed Sept. 17, 1963 (Pfluger 1963), which was a continuation-in-part of serial No. 98,007, filed Mar. 24, 1961. The Pfluger patent discloses a process for making freeze-dried instant coffee which has as its goal minimizing the loss from a foamed extract of volatile aromatics which contribute substantially to the natural flavor of coffee and other foods.

De George describes apparatus and methods for freezing liquid, unfoamed coffee extract prior to drying on continuous belts refrigerated by brine tanks contacting the bottom surfaces of the belts. The claims of De George are directed to processes for facilitating the removal of the frozen sheet of coffee extract from the belt before it is freeze dried.

The British patent discloses a rapid freeze-drying process in which the food product is frozen, milled into small particles which are spread from a hopper in single-particle layers onto plates, and freeze-dried in a vacuum chamber. More details of the disclosure are supplied infra.

Carpenter discloses the cooling of a refrigeration belt by spraying cold brine onto the underside of the belt.

The examiner made multiple rejections which were addressed by the board in eight categories, seven of which are before us for review. Category I covers the "interference" claims, which were rejected on the Pfluger patent, claims 1, 2, and 4 under 35 USC 102 and claims 37 and 38 under § 103. The board agreed with the examiner's position that these claims were not entitled to the benefit of appellants' 1965 Swiss priority date because they were not supported by appellant's parent and Swiss applications. The limitations held to be unsupported were "at least 35% [solids content]" in claim 1, "between 35% and 60% soluble solids" in claims 2 and 4, and "pressure of less than 500 microns" and "final product

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temperature of less than 110° F." in claim 4. For that reason appellants were held to be junior to the Pfluger patent on the basis of Pfluger's 1966 filing date. In light of appellants' refusal to file a Rule 204(c)³ affidavit showing a date of invention prior to Pfluger's 1966 filing date, the examiner and the board held the Pfluger patent to be prior art under § 102(e) against claims 1, 2, 4, 37, and 38 and rejected the claims on that basis.⁴ The board refused to hold that the claims were supported in the parent and Swiss applications, "for interference purposes," under our decision in *In re Waymouth*, 486 F.2d 1058, 179 USPQ 627 (CCPA 1973), mod. on reh., 489 F.2d 1297, 180 USPQ 453 (CCPA 1974). The board stated that appellants' failure to file a Rule 204(c) affidavit precluded any attempt to get into an interference and that Waymouth, which concerned the right to make a claim for interference purposes in the application on appeal, was therefore inapplicable to this case.

³ 37 CFR 1.204(c):

When the effective filing date of an applicant is more than three months subsequent to the effective filing date of the patentee, the applicant, before the interference will be declared, shall file two copies of affidavits or declarations by himself, if possible, and by one or more corroborating witnesses, supported by documentary evidence if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would prima facie entitle him to an award of priority with respect to the effective filing date of the patent. This showing must be accompanied by an explanation of the basis on which he believes that the facts set forth would overcome the effective filing date of the patent.

⁴ The examiner and the board did not rely on Pfluger 1963 because the solids content and foam density ranges of the copied claims were not described in that application. *In re Lund*, 54 CCPA 1361, 376 F.2d 982, 153 USPQ 625 (1967).

Under Category II, the board *affirmed* the rejection of claims 6-10, 12-15, 17, and 26 under 35 USC 132 for new matter. The board held that these claims, which were added to the instant application by amendment, were not supported in the original disclosure for lack of a description of the claimed size of the ground foam particles, i.e., "at least 0.25 mm."

The Category III rejection was *reversed* by the board.

In Category IV, claims 6-8, 11-20, and 40-43 were rejected under § 103 on the disclosure of Pfluger 1963⁵ carried forward to the Pfluger patent, in accordance with *In re Lund*, *supra*. The board found that the foam density range of 0.4-0.8 gm/cc claimed by appellants (and the 0.6-0.8 gm/cc range in claims 19 and 20) was suggested by Pfluger 1963's disclosure of 0.1-0.5 gm/cc foam density and that Pfluger 1963 teaches the use of foaming gases and concentrating the coffee extract prior to foaming. The board found that the final product densities claimed would be inherent "in view of the same foam overrun density disclosed by Pfluger" and that Pfluger's example I, which discloses breaking the frozen foam strands into 3/4" lengths (i.e., "at least 0.25 mm") before drying, would suggest the size of the ground foam particles claimed by appellants.

⁵ Peebles U. S. patent No. 2,897,084, issued July 28, 1959, was cited against claims 19 and 20 to show that agglomerating fine dried coffee particles into larger grounds was old in the art. Appellants have acknowledged this to be true, so it is not necessary to discuss Peebles further.

Category V added De George to the § 103 rejection of claims 9, 10, 30, and 32-35. The board agreed with the examiner that the temperatures, foam thicknesses, and belt lengths and speeds covered by these claims are disclosed in De George, and that it would be obvious to use De George's moving belt apparatus in the Pfluger process.

In Category VI claims 21-23 and 26-29 were rejected under § 103 on Pfluger in view of the British patent, which was relied on for its teaching of the concentration of coffee extract by freezing to a solids content of 27 to 28%. Pfluger was applied to the claims under the rationale employed in Category IV.

Category VII was the rejection of claims 24 and 25 under § 103 on Pfluger, the British patent, and De George, which was relied on to show "the deposition of a coffee extract on a moving belt prior to grinding and freeze drying." The board otherwise relied on the reasoning in Categories V and VI.

Under Category VIII claim 31 was rejected on Pfluger and De George under § 103 for the reasons of Category V, with reliance on Carpenter to show refrigeration of the belt by spraying refrigerant onto the bottom of the belt instead of using De George's brine tanks.

Opinion

The "Interference" Claims —1, 2, 4, 37, and 38

[1] The dispositive issue under this heading is whether appellants' parent and Swiss applications comply with 35 USC 112, first paragraph, including the description requirement, as to the subject matter of

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these claims. If they do, these claims are entitled to the filing dates of the parent application under 35 USC 120, *In re Lukach*, 58 CCPA 1233, 442 F.2d 967, 169 USPQ 795 (1971), and the Swiss application under 35 USC 119, *Kawai v. Metlesics*, 480 F.2d 880, 887-88, 178 USPQ 158, 164 (CCPA 1973). Since

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the PTO relies only on Pfluger 1966 to provide the effective U.S. filing date of the patent as a reference against these claims under §§ 102(e) and 103, a right of foreign priority in appellants' Swiss application will antedate Pfluger 1966 and remove it as prior art against the claims.

[2] The only defect asserted below in appellant's parent and Swiss application disclosures that covers all these claims is that the applications do not contain written descriptions of the solids content limitations of the concentrated extract prior to foaming, i.e., "at least 35%" (claim 1) and "between 35% and 60%" (claims 2, 4, 37, and 38).⁶

⁶ The solicitor belatedly asserts that the Swiss application is not "for the same invention" as the parent application, insofar as claims 1, 2, and 4 are concerned; he argues that the expression "same invention" in 35 USC 119 should be given the meaning employed by us in the double patenting cases, e.g., *In re Vogel*, 57 CCPA 920, 422 F.2d 438, 164 USPQ 619 (1970). As we indicated in *In re Ziegler*, 52 CCPA 1473, 347 F.2d 642, 146 USPQ 76 (1965), the solicitor's reading is too narrow. All § 119 requires is that the foreign application describe and seek protection for "broadly the same invention" as described in the U.S. application claiming its benefit. 52 CCPA at 1481, 347 F.2d at 649, 146 USPQ at 82. The Swiss application has essentially the same disclosure as appellants' parent application and claims broadly the same invention.

[3] Appellants' parent and Swiss applications contain virtually identical disclosures on this point. Both disclose that the coffee extract initially produced by percolation of water through ground roasted coffee is concentrated prior to foaming by suitable means "until a concentration of 25 to 60% solid matter is reached." Examples in each disclose specific embodiments having solids contents of 36% and 50%.

In our view, it is necessary to decide only whether the Swiss application complies with the description requirement of § 112 with respect to the questioned limitations. There is no question that the *instant* application supports claims 1, 2, and 4, which are original claims in that application. Appellants and the solicitor urge us to decide this case by determining whether the broad rule of *In re Waymouth*, *supra*, is still valid or must be disapproved. In the interest of judicial economy, we decline this entreaty since the issue of whether the Swiss application contains written descriptions of the disputed limitations of claims 1, 2, 4, 37, and 38, being addressed to strict compliance with § 112, first paragraph, is dispositive regardless of the validity of Waymouth in its own factual setting. The sufficiency of the parent U. S. application need not be separately decided since appellants must have the benefit of their Swiss application date to antedate the Pfluger patent.

[4] The function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him; how the specification accomplishes this is not material. *In re Smith*, 481 F.2d 910, 178 USPQ 620 (CCPA 1973), and cases cited therein. It is not necessary that the application describe the claim limitations exactly, *In re Lukach*, *supra*, but only so clearly that persons of ordinary skill in the art will recognize from the disclosure that appellants invented processes including those limitations. *In re Smythe*, 480 F.2d 1376, 1382, 178 USPQ 279, 284 (CCPA 1973).

[5] The primary consideration is *factual* and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure. The factual nature of the inquiry was emphasized in *In re Ruschig*, 54 CCPA 1551, 1558-59, 379 F.2d 990, 995-96, 154 USPQ 118, 123 (1967), which involved the question whether a broad generic disclosure "described" the single chemical compound claimed:

But looking at the problem, as we must, from the standpoint of one with no foreknowledge of the specific compound, it is our considered opinion that the board was correct in saying:

Not having been specifically named or mentioned in any manner, one is left to selection from the myriads of possibilities encompassed by the broad disclosure, with no guide indicating or directing that this particular selection should be made rather than any of the many others which could also be made.

Appellants refer to 35 USC 112 as the presumed basis for this rejection and emphasize language therein about *enabling* one skilled in the art to *make* the invention, arguing therefrom that one skilled in the art would be enabled by the specification to make chlorpropamide. We find the argument unconvincing for two reasons. First, it presumes some motivation for

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wanting to make the compound in preference to others. While we have no doubt a person so motivated would be enabled by the specification to make it, this is beside the point for the question is not whether he would be so enabled but whether the specification discloses the compound to him, specifically, as something appellants actually invented. We think it does not. Second, we doubt that the rejection is truly based on section 112, at least on the parts relied on by appellants. If based on section 112, it is on the requirement thereof that "The specification shall contain a written description of the invention * * *." [Emphasis ours.] We have a specification which describes appellants' invention. The issue here is in no wise a question of its compliance with section 112, it is a question of fact: *Is the compound of claim 13 described therein?* Does the specification convey clearly to those skilled in the art, to whom it is addressed, in any way, the information that appellants invented that specific compound?

Broadly articulated rules are particularly inappropriate in this area. See, e.g., *In re Smith*, 59 CCPA 1025, 1033, 458 F.2d 1389, 1394, 173 USPQ 679, 683 (1972), in which this court felt obliged to overrule a supposed "rule" of *In re Risso*, 54 CCPA 1495, 1500-01, 378 F.2d 948, 952-53, 154 USPQ 1, 5 (1967). Mere comparison of ranges is not enough, nor are mechanical rules a substitute for an analysis of each case on its facts to determine whether an application conveys to those skilled in the art the information that the applicant invented the subject matter of the claims. In other words, we must decide whether the invention appellants seek to protect by their claims is part of the invention that appellants have described as *theirs* in the specification. That what appellants claim as patentable to them is *less* than what they describe as their invention is not conclusive if their specification also reasonably describes that which they do claim. Inventions are constantly made which turn out not to be patentable, and applicants frequently discover during the course of prosecution that only a part of what they invented and originally claimed is patentable. As we said in a different context in *In re Saunders*, 58 CCPA 1316, 1327, 444 F.2d 599, 607, 170 USPQ 213, 220 (1971):

To rule otherwise would let form triumph over substance, substantially eliminating the right of an applicant to retreat to an otherwise patentable species merely because he erroneously thought he was first with the genus when he filed. Cf. *In re Ruff*, 45 CCPA 1037, 1049, 256 F.2d 590, 597, 118 USPQ 340, 347 (1958). Since the patent law provides for the amendment during prosecution of claims, as well as the specification supporting claims, 35 USC 132, it is clear that the reference to "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention" in the second paragraph of 35 USC 112 does not prohibit the applicant from changing what he "regards as his invention" (i.e., the subject matter on which he seeks patent protection) during the pendency of his application. Cf. *In re Brower*, 58 CCPA 724, [728] 433 F.2d 813, 817, 167 USPQ 684, 687 (1970) (fact that claims in continuation application were directed to subject matter which appellants had not regarded as part of their invention when the parent application was filed held not to prevent the continuation application from receiving benefit of parent's date).

[6] Claims 1 and 4 present little difficulty. Claim 1 recites a solids content range of "at least 35%," which reads literally on embodiments employing solids contents outside the 25-60% range described in the Swiss application. As in cases involving the enablement requirement of § 112, e.g., *In re Armbruster*, 512 F.2d 676, 185 USPQ 152 (CCPA 1975), we are of the opinion that the PTO has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a

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description of the invention defined by the claims. By pointing to the fact that claim 1 reads on embodiments outside the scope of the description, the PTO has satisfied its burden. Appellants thus have the burden of showing that the upper limit of solids content described, i.e., 60%, is inherent in "at least 35%," as that limitation appears in claim 1. Appellants have adduced no evidence to carry this burden as to claim 1, and they argue only that since the Pfluger patent contains claim 1 supported by Pfluger's disclosure with a stated upper limit of 60%, like appellants' Swiss disclosure, refusal to grant appellants claim 1 amounts to an illegal reexamination of claim 1 in Pfluger. However, as we have often repeated, as recently as *In re Giolito*, 530 F.2d 397, 188 USPQ 645 (CCPA 1976), it is immaterial in ex parte prosecution whether the same or similar claims have been allowed to others.

[7] Claim 4 contains the additional limitations, relating to the "final product temperature" and the pressure at which the frozen foam is vacuum freeze-dried, of "less

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than 100° F. and "less than 500 microns." "Final product temperature," it appears, refers to the temperature at which so-called bound water is driven off from the product by heating after the vacuum drying phase has ended. We find no description of final product temperature in appellants' Swiss application. It is not disputed that appellants do not expressly disclose final product temperatures or this secondary drying step. They again appeal, however, to the Pfluger patent disclosure and to an amendment entered in the application on appeal (not objected to as new matter by the examiner) to show that final product temperatures are conventional in the art and need not be expressly disclosed. The amendment is clearly irrelevant since claim 4, an originally filed claim, is its own written description in the appealed application. *In re Gardner*, 475 F.2d 1389, 177 USPQ 396, rehearing denied, 480 F.2d 879, 178 USPQ 149 (CCPA 1973). The issue is whether the Swiss application describes the claimed final product temperature, not whether the instant application does so. The Pfluger patent disclosure is also unavailable to appellants. The Swiss application was filed before Pfluger issued, which means that for the purposes of § 112 the Pfluger disclosure is not evidence of what those skilled in the art considered conventional at the time the Swiss application was filed. *In re Glass*, 492 F.2d 1228, 181 USPQ 31 (CCPA 1974).⁷

⁷ That the final product temperature limitation is not material, as appellants argue, does not matter when the limitation is copied. Immateriality excuses only *failure to copy* a limitation of a patent claim. See *Brailsford v. Lavet*, 50 CCPA 1367, 318 F.2d 942, 138 USPQ 28 (1963); 37 CFR 1.205(a).

Claims 1 and 4, therefore, are not entitled to the benefit of the filing date of appellants' Swiss application.

[8] Claims 2, 37, and 38, which claim a solids content range of "between 35% and 60%," present a different question. They clearly claim a range *within* the described broad range of 25% to 60% solids; the question is whether, *on the facts*, the PTO has presented sufficient reason to doubt that the broader described range also describes the somewhat narrower claimed range. We note that there is no evidence, and the PTO does not contend otherwise, that there is in fact any distinction, in terms of the operability of appellants' process or of the achieving of any desired result, between the claimed lower limit of solids content and that disclosed in the Swiss application. We see an important practical distinction between broad generic *chemical compound* inventions, for example, as in *In re Ruschig*, *supra*, in which each compound within the genus is a separate embodiment of the invention, and inventions like that at bar, in which the range of solids content is but one of several process parameters. What those skilled in the art would expect from using 34% solids content in the concentrated extract prior to foaming instead of 35% is a different matter from what those skilled in the art would expect from the next adjacent homolog of a compound whose properties are disclosed in the specification. We wish to make it clear that we are not creating a rule applicable to all description requirement cases involving ranges. Where it is clear, for instance, that the broad described range pertains to a different invention than the narrower (and

subsumed) claimed range, then the broader range does not describe the narrower range. *In re Baird*, 52 CCPA 1747, 348 F.2d 974, 146 USPQ 579 (1965); *In re Draeger*, 32 CCPA 1217, 150 F.2d 572, 66 USPQ 247 (1945).

[9] In the context of *this* invention, in light of the description of the invention as employing solids contents within the range of 25-60% along with specific embodiments of 36% and 50%, we are of the opinion that, as a factual matter, persons skilled in the art would consider processes employing a 35-60% solids content range to be part of appellants' invention and would be led by the Swiss disclosure so to conclude. Cf. *In re Ruschig*, *supra*. The PTO has done nothing more than to argue lack of literal support, which is not enough. If lack of literal support alone were enough to support a rejection under § 112, then the statement of *In re Lukach*, *supra*, 58 CCPA at 1235, 442 F.2d at 969, 169 USPQ at 796, that "the invention claimed does not have to be described in *ipsis verbis* in order to satisfy the description requirement of § 112," is empty verbiage. The burden of showing that the claimed invention is not described in the specification rests on the PTO in the first instance, and it is up to the PTO to give reasons why a description not in *ipsis verbis* is insufficient.

We conclude, therefore, that claims 2, 37, and 38 are entitled to the benefit of the filing date of appellants' Swiss application.

Since the Pfluger patent is not available as prior art as of its 1966 date under §§ 102(e) and 103 against claims 2, 37, and 38, the rejection of those claims is *reversed*. The rejection of claims 1 and 4 is *affirmed*. Appellants filed no affidavit under Rule 204(c) showing a date of invention for claims 1 and 4 prior

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to Pfluger's 1966 filing date, *In re Gemassmer*, 51 CCPA 726, 319 F.2d 539, 138 USPQ 229 (1963), and have not antedated Pfluger as to those claims under 35 USC 119 and 120.

The New Matter Rejection

[10] The issue to be decided here is whether the limitation appearing in claim 6, carried forward into the other claims affected by this rejection, that the frozen foam be ground "to a particle size of at least 0.25 mm" before it is dried, was added to the instant application in violation of 35 USC 132. This new matter rejection rests on a finding by the PTO that the application as filed did not describe this limitation. Thus, the converse of what we said in *In re Bowen*, 492 F.2d 859, 864, 181 USPQ 48, 52 (CCPA 1974), is true in this case, namely, that this new matter rejection is tantamount to a rejection of the claims on the description requirement of 35 USC 112, first paragraph. The solicitor agrees with this.

We conclude that the originally filed specification clearly conveys to those of ordinary skill in the art that appellants invented processes in which the frozen foam is ground to a particle size of "at least 0.25 mm," and not, as the PTO asserts, only processes in which the particle sizes are no larger than 2 mm. See *In re Smythe*, *supra*.

The specification states, *inter alia* (emphasis ours):

At the end of the [cooling] belt the extract is removed as a continuous rigid sheet which *may* then be broken up into fragments suitable for grinding. These fragments *may*, *for example*, be ground to a particle size which is *preferably* within the range 0.25 to 2.0 mm.

In a modification of the process, the frozen extract may be freeze-dried in the form of *plates or lumps* which are *subsequently* ground to the desired particle size.

The examples speak of drying frozen ground particles of sizes between 0.1 and 2 mm. While the specification indicates that the 0.25 to 2.0 mm range is preferred, we think it clearly indicates that, as an alternative embodiment of appellants' invention, the foam may be dried in lumps or plates of undisclosed size, which are reduced to the obviously smaller preferred particle size by grinding only *after* being dried.

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The solicitor argues that the claimed "range" has no upper limit, wherefore it is not disclosed. The clear implication of this disclosed modification is that appellants' specification does describe as their invention processes in which particle size is "at least 0.25 mm," without upper limit, as delineated by the rejected claims. The rejection of claims 6-10, 12-15, 17, and 26 under 35 USC 132 is reversed.

The "Non-Interference" Claims —6-35 and 40-43

In the Examiner's Answer, appellants were granted the benefit of the filing date of their Swiss application for claims 16-25, 27-35, and 40-43. The examiner stated: "Claims 6-15 and 26, except for new matter, would otherwise be supported in the Swiss application." Our reversal of the new matter rejection eliminates the basis for the examiner's refusal to give claims 6-15 and 26 the benefit of appellants' Swiss filing date. Appellants' parent and Swiss applications contain the same disclosures concerning particle size as does the application on appeal, and we shall treat all the claims under this heading as entitled to the right of foreign priority claimed by appellants.

Our analysis of these claims will be broken down by the type of claim involved, i.e., process, apparatus, and product, and not as the board addressed them. In each discussion we will apply as prior art under § 102(e) only those portions of the Pfluger patent disclosure that were carried forward from the Pfluger 1963 application (Pfluger 1963) through the two subsequent applications into the patent, as did the board. *In re Lund, supra.*

A. Process Claims 6-14 and 16-29

There are four independent process claims: claims 6, from which claims 7-14, 16, and 17 depend; claim 18; claim 19, from which claim 20 depends; and claim 21, from which claims 22-29 depend.

Pfluger 1963 contains the following disclosure, which, in substance, is carried forward into the patent:

This invention is founded on the discovery that an aqueous aromatic liquid containing solids in suspension and solution may be dried without undergoing loss of aromatic volatiles by a process which comprises foaming the aqueous liquid to a substantial overrun while avoiding evaporation of said aqueous liquid, freezing said foam to below its eutectic point while avoiding evaporation of the aqueous liquid, subliming said aqueous liquid from the frozen foam to reduce the moisture of the foam to at least 10-20%, and further drying the foam to a stable moisture content.

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In many applications such foaming can be considerably increased by concentrating the solution or suspension to a relatively high solids content prior to incorporation of air or other gas such as nitrogen therein by first whipping and then freezing the foam, preferably by conductive freezing. During the foaming step, it is essential in order to prevent loss of volatiles to avoid any evaporative cooling of the material, i.e., evaporation of water during the foaming step. Also, during the freezing step evaporative cooling should be avoided. Other ways for creating a frozen foam without undergoing evaporative cooling involve the overt introduction to a solution or suspension of dry ice, i.e., solid carbon dioxide in a suitably ground or particulate form, whereby carbon dioxide gas is liberated upon subliming of the "dry ice" to cause foaming of the solution or suspension to occur. Similarly, refrigerated air or nitrogen can be introduced to the solution or suspension to cause freezing thereof incident to foaming the material. The foam preferably has a high overrun whereby the density of the solution or suspension is changed from above 1.0 gm./cc. to between 0.1-0.5 gms/cc.

Example I, the sole disclosed embodiment in which the foam density is given, shows foaming the extract to a density of 0.22 gm/cc.

Claims 19 and 20 recite a foam density of "between about 0.6 and about 0.8 gm/cc," outside the range disclosed by Pfluger 1963. The examiner's position was that Pfluger's disclosure of 0.5 gm/cc as an upper density limit suggests "about 0.6 gm/cc" as the lower limit in the processes of claims 19 and 20 "in the absence of a critical difference between them." We see no such suggestion. By preferring a high foam overrun, i.e., lower rather than higher foam densities, Pfluger 1963 teaches away from employing higher foam densities than its disclosed upper limit of 0.5 gm/cc. Appellants' "about 0.6 gm/cc" lower limit is sufficiently precise to describe foam densities above 0.5 gm/cc and thus outside the range of foam densities that persons of ordinary skill in the art would have been motivated to use by Pfluger 1963's disclosure of a preference for high overrun foams no denser than 0.5 gm/cc. The examiner's comment about the lack of a showing of a critical difference is based on his failure to appreciate that Pfluger 1963 teaches away from increasing foam density. The rejection of claims 19 and 20 under § 103 is reversed.

[11] Claims 6-14, 16, 17, and 21-29 recite foam density ranges of "between about 0.4 and 0.8 gm/cc" and solids contents in the range of "about 25% to 60%." Claims 6-10, 12-14, 17, and 26 recite particle sizes of "at least 0.25 mm," claims 16 and 27 say "about 0.25 to 2 mm," claims 11 and 28 recite particle sizes "approximately equal to that of roast and ground coffee," and claims 21-25 do not mention particle size. Pfluger 1963's disclosed foam density range of 0.1-0.5 gm/cc covers values within the scope of all the above-listed claims; the solids contents disclosed in Pfluger 1963 Examples I (27%) and V (30%) are within the claimed ranges of 25-60%. Pfluger 1963 clearly teaches a process for making instant coffee comprising the steps of preparing and concentrating aqueous coffee extract, foaming the extract then freezing the foam, and drying the frozen foam, in that order. Pfluger 1963 teaches fragmenting the frozen foam into $\frac{3}{4}$ -inch pieces before drying; $\frac{3}{4}$ inch is, of course, "at least 0.25 mm." Of course, the disclosure in the prior art of any value within a claimed range is an anticipation of the claimed range. We appreciate the arguments made in *In re Malagari*, 499 F.2d 1297, 182 USPQ 549 (CCPA 1974), and the discussion in *In re Orfeo*, 58 CCPA 1123, 440 F.2d 439, 169 USPQ 487 (1971), to the effect that ranges which overlap or lie inside ranges disclosed by the prior art may be patentable if the applicant can show criticality in the claimed range by evidence of unexpected results. The rejections here are under § 103, not § 102, which requires us to consider appellants' argument that their invention and Pfluger's disclosure are directed to different purposes and that persons of ordinary skill in the art would not look to Pfluger 1963 for a solution to the problem addressed by appellants. See *In re Orfeo*, *supra*.

[12] Appellants' contentions were thus stated in their main brief:

The Board erred at the threshold in failing to appreciate that neither the Pfluger patent nor the 1963 Pfluger application gives any inkling or hint of the inventive concept underlying the rejected claims. * * The Pfluger disclosures make no mention of product bulk density and contain no suggestion of altering or regulating that density in any manner. Neither does the reference suggest appellants' step of grinding the foam before freeze drying.

One of ordinary skill in the art reading the 1963 Pfluger disclosure would have no

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inkling of the problem addressed and solved by appellants; and one looking for ways to meet that problem would have no occasion to consider Pfluger or his expedients.

Without an antecedent basis for it in their application, appellants may not use this rationale to show unobviousness. *In re Davies*, 475 F.2d 667, 177 USPQ 381 (CCPA 1973). While appellants do disclose what the bulk density of their product "usually" is, we find no suggestion in appellants' application that their invention is addressed to the regulation of the bulk density of the product, and the claims make no express reference to such regulation. The only references in appellants' disclosure to this alleged problem and its solution which are apparent to us are (emphasis ours):

After freeze-drying, the coffee extract is obtained in the form of a powder the density of which is usually 0.2 to 0.3 gm/cc.

Drying of the concentrated extract should *desirably* be carried out *under controlled conditions* such that the finished product possesses an appropriate *density* and colour. * * *

* * * The conditions of freezing, notably belt speed, freezing temperature, thickness of foam layer as well as the *density of the foam*, are factors which have an important *influence* on the *colour* of the finished product and should therefore be carefully controlled.

The inadequacy of this disclosure is evident. There is no mention of *regulating* the final product density or of controlling solids content. We therefore see no basis for depreciating Pfluger as evidence of the scope and content of the prior art, as well as of the level of ordinary skill in this art, as appellants would have us do. Nor is there any factual basis for concluding that the ranges claimed by appellants are critical in themselves to their alleged inventive contribution.

[13] We find no error in the rejection under § 103 of claims 6-14, 16, and 21-28, which recite no final product density. The only difference between claims 6, 12-14, and 16 and the Pfluger 1963 disclosure upon which appellants rely to show the unobviousness of the subject matter of the claims (and which does not relate to solids content or foam density) is the step of "grinding the frozen foam to a particle size of at least 0.25 mm" *prior* to freeze-drying.⁸ Pfluger 1963, appellants assert, "fragments" the frozen foam prior to drying and "grinds" the foam only after it has been dried. As indicated above, the size of the fragments of frozen foam disclosed by Pfluger 1963 is "at least 0.25 mm." We do not think this difference shows the subject matter to be unobvious. Pfluger 1963 implies that the sizes of foam particles before and after drying are comparable; it would have been obvious to reduce the size of the foam particles by suitable mechanical means, whether it be called fragmenting or grinding, to the desired end product size before rather than after drying. Claim 11 differs only in its recitation of final product particle size, which Pfluger 1963 shows is an obvious matter of choice for those of ordinary skill in the art, who know how large ground roasted coffee bean particles are. The commercial motivation for making the particles this size is obvious. Appellants have not *argued* the patentability separately from claim 6 of claims 9 and 10, which add temperature and foam thickness limitations suggested by Pfluger and De George, as discussed infra in considering claims 24 and 25.

⁸ Appellants do not deny that the features added in claims 7, 12, 13, and 14 are taught in the art, and the record shows them to be known in the prior art.

[14] Claim 8 likewise recites no final product density, but it requires that the freezing of the foam take place over a period of 7 to 25 minutes, which, appellants' application indicates, produces instant coffee "having a pleasant dark colour." Pfluger 1963 discloses freezing in liquid nitrogen or liquid air, which would be instantaneous, or rapid freezing on a belt, and states further, "The foam may be frozen at a high or a more gradual rate *without any apparent difference* in the utility thereof insofar as freeze drying is concerned * * *." (Emphasis ours.) Appellants have not shown that only their claimed freezing time produces coffee with a pleasant dark color. Thus, they have not overcome the *prima facie* case of obviousness made out by Pfluger 1963.

In light of appellants' concession in the amendment in which they added claims 37-39 that freeze concentration was known in the art, the rejection of claims 21-23, and 26-28 under Category VI, *supra*, becomes little more than a rejection on Pfluger 1963 alone. With the exception of freeze concentration, which is disclosed by the British patent, every element of claim 21 is disclosed by Pfluger 1963, as indicated *supra*. Appellants advance no arguments for the patentability of claim 21 different from those

11, respectively; these particle sizes are not sufficient to show unobviousness for the reasons given supra. Claim 23, which was also rejected under Category VI, recites the freezing time of claim 8. It is unpatentable for the same reasons given for claim 8, supra.

Claims 24 and 25, to which Pfluger 1963, De George, and the British patent were applied under § 103, call for the temperature and foam limitations already discussed under claims 9 and 10, supra. Temperature and foam thickness within the claimed ranges are disclosed by Pfluger 1963 in Example VI (freezing foam at —30° F. on a belt and subsequently loading foam onto trays to a 1-inch (approx. 25mm) depth for vacuum drying). Appellants do not allege that the ranges of claims 24 and 25 are critical.

[15] Claims 17, 18, and 29, on the other hand, recite the bulk density of the final product made by each process in positive terms. The board dismissed these final product density limitations as being merely recitations of the inherent result of observing the foam density and solids content ranges set forth in these claims. Although we found above that appellants' specification as filed does not disclose regulating product density by controlling the foam density and solids content in the process and that claims which failed to recite controlled product density could not rely on this feature to distinguish over the prior art under § 103, these claims do require such regulation or control, by implication through their express recitation of the density of the final product to be obtained from the processes they delimit. That persons skilled in the art may not know how to ensure the claimed final product densities from the specification is pertinent only to a rejection on the enablement requirement of § 112, first paragraph, which is not before us. The only question here is whether the subject matter of claims 17, 18, and 29, the scope of which is unquestionably clear, is obvious under § 103.

[16] Pfluger 1963 discloses no final product densities and contains no teaching on how to achieve any particular final product density from practicing its process. The inherency of final product density adverted to by the board can be gleaned only from appellants' disclosure, if anywhere, which may not be used against them as prior art absent some admission that matter disclosed in the specification is in the prior art. *In re Kuehl*, 475 F.2d 658, 177 USPQ 250 (CCPA 1973); cf. *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). In the absence of disclosure of final product densities or how to achieve any desired density in the prior art applied by the PTO to claims 17, 18, and 29, we cannot say that the subject matter of these claims would have been obvious to persons of ordinary skill in the art.

The rejection of process claims 6-14, 16, and 21-28 is *affirmed*; the rejection of claims 17-20, and 29 is *reversed*.

B. Apparatus Claims 30-35

[17] The preamble of independent claim 30, carried forward into claims 31-35, recites that the apparatus is "for carrying out the process in claim 6." Appellants contend that this preamble gives "life and meaning" to the claims, serving to define the interrelationship of the mechanical elements recited in the body of the claims. This argument appears to be based on *Kropa v. Robie*, 38 CCPA 858, 187 F.2d 150, 88 USPQ 478 (1951), the classic case in this court on the construction of claim preambles. In *Kropa* the court surveyed prior cases and said 38 CCPA at 861, 187 F.2d at 152, 88 USPQ at 480-81:

[I]t appears that the preamble has been denied the effect of a limitation where the claim or count was drawn to a structure and the portion of the claim following the preamble was a self-contained description of the structure not depending for completeness upon the introductory clause * * *. In those cases, the claim or count apart from the introductory clause completely defined the subject matter, and the preamble merely stated a purpose or intended use of that subject matter.

While we do not subscribe to the broad proposition that process limitations can never serve to distinguish the subject matter of apparatus claims from the prior art, we fail to see how the general process parameters of claim 6 require an arrangement of the apparatus means recited in claims 30-35 more specific than that set forth in the body of each claim. In no claim is the preamble relied on to provide an antecedent basis for terms in the body. See *In re Higbee*, 527 F.2d 1405, 188 USPQ 488 (CCPA 1976).

The context of each invention is clear without reference to claim 6, unlike the situation in Kropa, *supra*, in which the preamble "An abrasive article" was the only portion of the claim defining the relationship of the components recited in the body of the claim; the court said, "The term calls forth a distinct relationship between

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the proportions of grain and resin comprising the article." 38 CCPA at 862, 187 F.2d at 152, 88 USPQ at 481.

[18] Appellants do not argue the patentability of claims 32-35 separately from claim 30 and concede that Carpenter discloses the feature added in claim 31. We find that the teachings of Pfluger and De George (and Carpenter on claim 31) show that the subject matter of claims 30-35 would have been obvious to persons of ordinary skill in the art. These references are to be viewed for what they disclose in their entireties and not merely for their inventive contributions to the art. *In re Ogiue*, 517 F.2d 1382, 1387, 186 USPQ 227, 232 (CCPA 1975).

Pfluger 1963, in a portion carried forward to the patent, discloses the following:

Advantageously, in following the teachings of the present process either in a vacuum freeze drying application or in an atmospheric freeze drying application, the frozen foamy mass may be arranged for either batch or continuous processing in any one of a variety of conventional plant handling applications. Thus, the foamy mass can be readily transferred from one food handling station to another, deposited in trays or continuous belts, superimposed on one another or otherwise conventionally located in the vicinity of the freeze drying influences. In the case of a typical freeze drying operation the foams may be frozen and deposited onto trays stacked one above the other on a suitable heat transfer surface in a vacuum chamber. In the case of an atmospheric freeze drying application the foams can be stacked one upon the other upon a foraminous drying member permitting the circulation of the drying medium, e.g. dry air, helium or nitrogen. Throughout all of such freeze drying applications it is imperative that the temperature of the foamy mass be maintained below the eutectic point of the material while drying to assure that the foam stays in a substantially solid or frozen state as distinguished from a melted or semi-liquid state, dehydration of the mass being achieved by a process of sublimation as distinguished from one of evaporation. Such conditions should be followed at least until the moisture content of the foamy mass has been substantially reduced to a point where it has lost at least a majority of its moisture and preferably is superficially dry to the touch, i.e. in the neighborhood of 10-20% moisture by weight.

Example VI of Pfluger 1963, which is carried forward as Example III of the Pfluger patent, shows heat controlling the vacuum chamber to assure a product temperature below —10° F. (De George teaches that the melting point of a 28% solids content extract is about 27° F., whereas the eutectic temperature is constant regardless of concentration at about —13.5° F.) De George discloses the use of endless belts, low speeds, and refrigerating means, and appellants, while arguing that De George treats the handling of solid slabs of frozen extract on refrigeration belts and not frozen foamed extracts, do not and cannot deny that De George discloses apparatus that persons of ordinary skill in the art would have deemed *suitable* for handling foams in the manner shown by Pfluger. Appellants also contend that neither reference discloses the "spreading device" recited in the claims, Pfluger 1963 showing only the application of 1/8 diameter ribbons of foam through a nozzle to stationary freeze drying trays. The reference in the portion of Pfluger 1963 quoted *supra* to the deposition of the foam on the belts is ample suggestion, in our opinion, that some means must be employed to apply the foamy mass to the continuous belts. The term "spreading device" is not defined in any special way by appellants and is broad enough to be the means for applying the foam to the belt suggested by Pfluger. The rejection of claims 30-35 is *affirmed*.

C. Product Claims 15 and 40-43

[19] These claims are cast in product-by-process form. Although appellants argue, successfully we have found, that the Pfluger 1963 disclosure does not suggest the control of bulk density afforded by

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appellants' process, the patentability of the *products* defined by the claims, rather than the processes for making them, is what we must gauge in light of the prior art. See *In re Bridgeford*, 53 CCPA 1182, 357 F.2d 679, 149 USPQ 55 (1966). Each of these claims defines a freeze-dried instant coffee product made by processes which, appellants have contended with respect to their process claims, produce, by virtue of the foam density and solids content ranges taught by appellants, products having a bulk density comparable to spray-dried instant coffee, i.e., 0.2-0.3 gm/cc as indicated in appellants' specification. The solids content and foam density ranges disclosed by Pfluger 1963 overlap those of appellants, and, it appears, the Pfluger process using solids contents and foam densities overlapping those of appellants will produce instant coffee which is indistinguishable from appellants' products. There is no evidence showing that Pfluger's product prepared, for example, using an extract of 30% solids con

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tent foamed to a density of 0.5 gm/cc differs from appellants' claimed products in any way, certainly not in any unobvious way. See *In re Avery*, 518 F.2d 1228, 1233-34, 186 USPQ 161, 165-66 (CCPA 1975). That some of the products covered by appellants' claims may not be disclosed or suggested by Pfluger 1963 is not relevant to patentability, since the claims embrace other subject matter completely disclosed by Pfluger 1963, complete disclosure in the prior art being the epitome of obviousness. *In re Pearson*, 494 F.2d 1399, 181 USPQ 641 (CCPA 1974). The rejection of these product claims under § 103 on Pfluger⁹ is affirmed.

⁹ Appellants argue in their reply brief that claims 40-43 "were never the subject of an accurate or proper rejection," because the examiner and the board incorrectly grouped them with other claims. As we have indicated, the rejection of claims 40-43 on Pfluger under § 103 was "proper"; appellants do not contend that they could not understand the basis for the rejection because of failure of the PTO to give clear reasons for its action under 35 USC 132, and we find the explanations given by the examiner and board with respect to claims 40-43 to have been legally ample under § 132. Cf. *In re Gustafson*, 51 CCPA 1358, 331 F.2d 905, 141 USPQ 585 (1964).

Conclusion

The appeal is dismissed as to withdrawn claims 3, 5, 36, and 39. The decision of the board is affirmed as to claims 1, 4, 6-16, 21-28, 30-35, and 40-43, and is reversed as to claims 2, 17-20, 29, 37, and 38.

APPENDIX

2. The process of claim 1 wherein the extract is concentrated to between 35% and 60% soluble solids prior to the foaming step.
3. The process of claim 2 wherein the concentrated extract is foamed to an overrun density of between 0.1 to 0.7 gm/cc.
4. The process of claim 2 wherein the frozen foam is vacuum freeze-dried at a pressure of less than 500 microns and a final product temperature of less than 110° F.
5. The process of claim 3 wherein the frozen foam is vacuum freeze-dried at a pressure of less than 500 microns and a final product temperature of less than 110° C.
7. A process according to claim 6 in which said inert gas is at least one of the following gases, namely carbon dioxide, nitrous oxide and nitrogen
8. A process according to claim 6 in which the foam is frozen during 7 to 25 minutes.

9. A process according to claim 6 in which the foam is frozen on a moving belt which is cooled to a temperature between —12 and —70° C.
10. A process according to claim 6 wherein the foam is spread on the belt at a layer thickness of 10 to 40 mm.
11. A process according to claim 6 in which the frozen foam is ground, before freeze-drying, to a particle size approximately equal to that of roast and ground coffee.
12. A process according to claim 6 in which an aromatic condensate obtained by stripping roast and ground coffee is added to said concentrated extract before it is transformed into a foam.
13. A process according to claim 6 in which, after freeze-drying, the powdered coffee extract is aromatised by incorporation therein of 0.1 to 0.5% by weight of an aromatic condensate obtained by stripping of roast and ground coffee.
14. A process according to claim 13 in which said condensate is incorporated in said powdered extract in admixture with an oily carrier.
15. The coffee extract obtained by the process defined in claim 6.
16. Process according to claim 6 in which the frozen foam is ground to a particle size of about 0.25 to 2.0 mm.
17. Process according to claim 6 in which the freeze dried extract has a density of about 0.2 to 0.3 gm/cc.
18. Process for preparing a soluble coffee extract, which comprises adding inert gas to a concentrated aqueous extract of roast coffee having a solids content of about 25% to about 60% to provide a foam, freezing the foam to a solid mass, reducing the frozen foam to particles having a size of about 0.25 to 2.0 mm and freeze drying the frozen particles, the amount of inert gas added to the aqueous extract being sufficient to provide a freeze dried extract having a density between about 0.2 and 0.3 gm/cc.
19. Process for preparing a powdered coffee extract which comprises adding sufficient inert gas to a concentrated aqueous extract of roast coffee to provide a foam having a density between about 0.6 and about 0.8 gm/cc, freezing the foamed extract to a solid mass, grinding the frozen foam to an average particle size of 0.1 to 0.5 mm, freeze drying the ground particles to provide a finely powdered coffee extract, and agglomerating the finely powdered coffee extract.
20. Process according to claim 19, in which the powdered extract is agglomerated to provide an agglomerate having a density of about 0.2 to 0.3 gm/cc.
21. Process for preparing a powdered coffee extract which comprises increasing the soluble coffee solids content of an aqueous extract of roast ground coffee to about 25% —60% by freeze concentration, separating the concentrated extract from ice crystals, adding an inert gas to the concentrated aqueous extract to provide a foam having a density between about 0.4 and 0.8 gm/cc, freezing the foam to a solid mass and freeze drying the frozen foam.
22. Process according to claim 21 in which the inert gas is selected from the group consisting of carbon dioxide, nitrous oxide and nitrogen.
23. Process according to claim 21 in which the foam is frozen during 7 to 25 minutes.
24. Process according to claim 21 in which the foam is frozen on a moving belt which is cooled to a temperature between —12 and —70° C.

25. Process according to claim 24 wherein the foam is spread on the belt at a layer thickness of 10 to 40 mm.

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26. Process according to claim 21 in which the frozen foam is ground before freeze drying to a particle size of at least 0.25 mm.

27. Process according to claim 26 in which the frozen foam is ground to a particle size of about 0.25 to 2 mm.

28. Process according to claim 21 in which the frozen foam is ground before freeze drying to a particle size approximately equal to that of roast and ground coffee.

29. Process according to claim 21 in which the freeze dried extract has a density of about 0.2 - 0.3 gm/cc.

31. An apparatus according to claim 30 in which the means for cooling the belt includes a plurality of sprinklers disposed to spray the refrigerant onto the underside of the belt.

32. An apparatus according to claim 30 in which the belt comprises two sections each provided with separate cooling means, the first of said sections being cooled to a temperature of —12 to —29° C and the second section to —40 to —70° C.

33. An apparatus according to claim 30 also comprising means for fragmenting and milling the frozen foam.

34. An apparatus according to claim 30 in which the length of said belt is 15 to 25 metres and the driving means is adapted to move said belt at a linear speed of about 0.5 to 1.5 m/min.

35. An apparatus according to claim 30 in which said chamber is adapted to be maintained at a temperature of —25 to —45° C.

36. The process of claim 2 wherein the concentrated extract is foamed to an overrun density of between about 0.1 to 0.8 gm/cc.

37. The process of claim 2 wherein the concentrated [506] extract is foamed to an overrun density of between 0.4 to 0.8 gm/cc.

38. The process of claim 2 wherein the frozen foam is vacuum freeze-dried at a pressure of about 150 to 175 microns.

39. The process of claim 3 wherein the frozen foam is vacuum freeze-dried at a pressure of about 150 to 175 microns.

41. A coffee powder according to claim 40 wherein the extract before freeze drying contains about 25% to 60% by weight of soluble coffee solids.

42. A dry coffee powder having a density of about 0.2 to 0.3 gm/cc and comprising a freeze dried particulated foamed extract of roast and ground coffee, said extract containing before freeze drying up to about 60% by weight of soluble coffee solids.

43. A coffee powder according to claim 42 containing about 0.1% to 0.5% by weight of aromatic condensate obtained by stripping roast and ground coffee.

Concurring/Dissenting Opinion Text

Concurrence/Dissent By:

Baldwin, Judge, concurring in part and dissenting in part.

I agree with Judge Miller's treatment of claims 17-20 and 29. Otherwise, I join the majority opinion.

Concurring/Dissenting Opinion Text

Concurrence/Dissent By:

Miller, Judge, dissenting in part and concurring in part.

I dissent on claim 1. The error of the majority in affirming the rejection stems from a misstatement of the issue. It is not necessary when antedating a reference under 35 USC 102(a) or (e) to establish a prior reduction to practice, constructive or actual, of *all* the subject matter falling within the claims. It is necessary only to establish a reduction to practice of sufficient subject matter to render the claimed invention obvious to one of ordinary skill in the art. In re Spiller, 500 F.2d 1170, 182 USPQ 614 (CCPA 1974). The majority errs, therefore, in seeking a description in appellants' parent and foreign priority applications to support the entire claimed subject matter as though these were the applications in which the claims appear. See In re Ziegler, 52 CCPA 1473, 347 F.2d 642, 146 USPQ 76 (1965). Appellants have clearly shown possession of enough of the invention to antedate Pfluger 1966 by establishing a prior constructive reduction to practice in their parent and foreign applications of specific embodiments disclosing concentrating to 50% and 36% total solids and by a broader disclosure of "25 to 60%."

Although the rejection of claim 1 arises in the context of an attempt to initiate an interference, the rejection is clearly under 35 USC 102(a) or (e) and not under Rule 204(c), 37 CFR 1.204(c). Even if the rejection were under that rule, the substance of the rule's requirement for evidence sufficient to establish a prima facie case for a judgment of priority against Pfluger 1966 would be satisfied by the prior constructive reduction to practice of embodiments within claim 1 in appellants' parent and foreign applications. Hunt v. Treppschuh, 523 F.2d 1386, 187 USPQ 426 (CCPA 1975); Fontijn v. Okamoto, 518 F.2d 610, 186 USPQ 97 (CCPA 1975).

The majority cites In re Gemassmer, 51 CCPA 726, 319 F.2d 539, 138 USPQ 229 (1963), to support its decision on claim 1. It suffices to note that Gemassmer was decided more than a decade before In re Spiller, Hunt v. Treppschuh, and Fontijn v. Okamoto, *supra*.

I concur in the decision on claim 4 since appellants' parent and foreign applications are silent regarding final product temperature and a secondary heating step and, therefore, fail even as a constructive reduction to practice of the invention of claim 4.

I concur also in the decision on claims 19 and 20, but I do not find it necessary to hold, as the majority implicitly does, that "about 0.6" gm/cc excludes 0.5 gm/cc disclosed in the reference as the upper limit of merely a *preferred* range. Moreover, it is obvious from the reference that the process would work at a higher density than 0.5,

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although inferior results might be expected. My concurrence rests on the requirement of claims 19 and 20 of a specific sequence of steps not suggested by the prior art, namely: providing a high density of about 0.6 to about 0.8 gm/cc, grinding to a fine particle size prior to freeze drying, freeze drying, and finally agglomerating the fine particles into larger particles. This achieves a "highly coloured product of regular particle size." There is no suggestion in the prior art of deliberately grinding to a fine size and then

agglomerating to a larger size.

I dissent on claims 17, 18, and 29, because there is at least a *prima facie* relationship between product and foam densities. The board noted this by stating that "the freeze dried density of the coffee would be inherent in view of the same range of foam overrun density disclosed by Pfluger." Since the foam densities and other conditions disclosed by Pfluger for the process claimed are approximately the same, appellants should be required either to show that the reference does not achieve the same product densities or to establish criticality. Since they have not done so, I would affirm the rejection of claims 17, 18, and 29.

- End of Case -